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Associate Editors

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Assistant Editor

LIEUTENANT S O WAIFE (MC) USNR

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Monthly Message

A letter received recently by a United States Senator from one of the New England states related the following incident While in Japan a lady awoke one morning with a severe pain in one arm and was unable to move it Ascertaining that there was a large American hospital in the city she and her husband went there at 9 00 a m to seek advice and help They were given an appointment at 3 00 p m On returning to the hospital at the appointed hour she was informed that the doctor refused to see her as she didn't belong to the armed services She came out crying as the pains got worse and was dumbfounded by this treatment She finally was able to obtain treatment from a Swiss physician Some remarks we heard from other Japanese people were Is this the American Democracy you are trying to teach the world?

One scarcely needs to ask the question What is wrong with this picture? All who profess to be doctors should constantly bear in mind an axiom well expressed by the late Dr Ferdinand Sauerbruch in 1929 To be a physician is to be a servant of the sick Furthermore it is the duty of the physician to do more than he has to and to give of himself generously Finally all doctors in the Armed Forces must remember that they not only represent the medical and dental professions but they are also officers of the Armed Forces of the United States and as such have the opportunity and duty each day to serve as representatives of this country and dependent on their own actions and way of life good will will accrue both among their fellows in arms and fellow Americans and also among the people of the countries in which they are stationed

Frank B Berry

FRANK B BERRY M D
Assistant Secretary of Defense
(Health and Medical)

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Foreword

The United States Armed Forces Medical Journal is published monthly by the Department of Defense. The Assistant Secretary of Defense (Health and Medical) directs the Surgeon General of the Army, the Surgeon General of the Navy, and the Surgeon General of the Air Force in the publication of this journal. The Surgeon General of the Army is the principal author of the journal, and the Surgeon General of the Navy and the Surgeon General of the Air Force are the principal reviewers.

FRANK B. BERRY, M.D.

Assistant Secretary of Defense (Health and Medical)

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UNITED STATES ARMED FORCES MEDICAL JOURNAL

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Number 1

THE INTERMEDIATE CORONARY SYNDROME

ASHTON GRAYBIEL *Captain (MC) USN*

PERSONS with disease of the coronary arteries are subject to "attacks" which may be looked upon as complications of this underlying pathologic state. There is general agreement regarding the use of the terms *angina pectoris* and *myocardial infarction* in describing two types of attacks, but these terms do not include all attacks. Attempts have been made to fill this gap by describing "severe" forms of the *anginal syndrome*^{1, 2} and mild types of *infarction*³⁻⁶. Another approach has been to describe additional types of attacks which are essentially distinct syndromes. In an important article, Blumgart and his associates⁷ proposed the term "coronary failure" to designate episodes in which patients suffered cardiac pain more prolonged than that consistent with *angina pectoris* yet in whom there was neither clinical evidence of *myocardial infarction* nor was it found at post mortem. They pointed out that these attacks sometimes coincided with factors known to increase the work of the heart or decrease its blood supply but if they occurred under circumstances previously known to provoke pain the clinical diagnosis of "coronary failure due to acute coronary occlusion" is justifiable. In 1948, Freedburg and associates⁸ amplified the original description and extended the concept to include patients who exhibited slight systemic responses to the injury and whose electrocardiograms showed slight transitory changes of the RS-T segment and the T wave.

Shortly after Blumgart and associates' original article appeared Master and co-workers⁹ introduced a new classification of coronary heart disease emphasizing the differentiation between *angina pectoris*, *acute coronary occlusion* and *acute coronary insufficiency*. They redefined *acute coronary occlusion* as complete obstruction of a coronary artery with massive confluent *myocardial infarction*. *Acute coronary insufficiency* fell between

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angina pectoris and coronary occlusion and they stated that the clinical picture may simulate coronary occlusion or there may be no symptoms at all but the electrocardiogram and the pathological changes are specific. It was pointed out in further reports that a wide variety of etiological factors acted as predisposing or precipitating agents.

Our experience in dealing with patients suffering from coronary heart disease has also emphasized the need for additional categories which would aid the clinician in the handling of these cases. From a practical standpoint such categorization must be capable of sharp definition and should be based on clear cut clinical indicators and not on obscure pathophysiologic mechanisms. In our opinion it is relatively easy and very much worthwhile to distinguish a type of acute attack due to coronary heart disease which is intermediate in severity between angina pectoris and myocardial infarction. In the brief account which follows, chief emphasis will be placed on the differential diagnosis from the clinical point of view.

The *intermediate coronary syndrome* is defined as an acute attack complicating coronary heart disease in which evaluation of the pain distinguishes it from the anginal syndrome and evaluation of the other clinical findings distinguishes it from myocardial infarction. We prefer the term *intermediate coronary syndrome* to *coronary failure* both because it suggests the relationship to angina and infarction and because its meaning is univocal. However our clinical observations agree so well with those reported by Blumgart and his associates that a general identity of the cases to be placed in this intermediate category may be assumed.

DIAGNOSIS

Diagnosis of the intermediate coronary syndrome is most readily made by excluding the angina syndrome on the one hand and myocardial infarction on the other. Advantage can be taken of the fact that by introducing this intermediate category the criteria for the diagnosis of the angina syndrome and myocardial infarction can thereby be sharpened. Although coronary atherosclerosis is to be regarded as the chief predisposing factor this aspect of the diagnosis will be considered here only insofar as it appears in the differential diagnosis.

The differentiation between the anginal and intermediate syndrome should be based mainly on a careful evaluation of the symptom pain. The more important aspects of this evaluation concern not so much the characteristics of the pain *per se* but such factors as the history of previous attacks, the circumstances attending the onset and cessation of pain, and the uniformity or lack of it in the clinical picture of the attack.

The true anginal attack is usually a mild affair in a person with severe heart disease. Frequently there is a history of repeated attacks with gradually decreasing reserve over a relatively long time. The patient is usually aware of the factors which may bring on the pain and the circumstances or remedies which can be counted on to relieve it. Having experienced an attack, he feels no worse because of it and may even enjoy a brief period thereafter during which exercise tolerance is increased. One attack is much like another and patients are quick to appreciate any significant change in symptoms.

Prolonged duration is the single most important characteristic of the pain itself which suggests the occurrence of something more severe than the anginal syndrome. This should be suspected if the pain lasts longer than a few minutes after the precipitating factor is no longer present or after the administration of a vasodilating agent such as nitroglycerin. The location, radiation, and severity of the pain are far less important as differential clues.

Much more significant than the character of the pain are the circumstances attending the onset. Pain arising spontaneously, or at least without obvious cause, usually declares something more severe than the anginal syndrome. Even though the pain is related to factors which increase the work of the heart, the anginal syndrome is unlikely if this represents either a sudden or great reduction in exercise tolerance, it is even more unlikely in the case of an initial attack.

Lack of similarity in the attacks points away from the diagnosis of angina pectoris. This is particularly true with regard to the readiness with which the pain is precipitated, change in the location, character or radiation of the pain, and the ease with which relief is obtained. Less important are such factors as the number of attacks, the severity of the pain and small changes in exercise tolerance.

Differentiation between myocardial infarction and the intermediate syndrome is not difficult if the definition of infarction is kept in mind. It may be worth while to recall that an infarct is "an area of coagulation necrosis in a tissue due to local anemia resulting from obstruction of circulation to the area." This is a formidable diagnosis to make on the basis of clinical findings unless they are definite and clear cut. Although infarction may be strongly suspected on the basis of the sudden onset of pain characteristic of myocardial ischemia and the symptoms of heart failure yet the diagnosis is not definite until either there are changes in the electrocardiogram pathognomonic of the systemic response, attributable beyond reasonable doubt, to the absorption of necrotic material from the heart. Even the appearance of

a friction rub indicating pericarditis cannot be taken as definite evidence of infarction unless it fits into the rest of the clinical picture. In the absence of any pathognomonic indicator it may be difficult almost a matter of opinion to decide when the total clinical picture can be taken as proof of infarction.

Except for pain it is the paucity of symptoms in the intermediate coronary syndrome which suggests that myocardial infarction has not occurred. The physical examination often reveals little that can be regarded as abnormal. The patient may appear well, the heart not enlarged, the rhythm regular, and the heart sounds of good quality. The blood pressure may be normal and there may be no evidence of heart failure.

Serial electrocardiograms often reveal significant alterations usually lasting for brief periods. Depression of the RS T segments and lowering or inversion of the T waves are the changes most frequently observed. However, we have observed one instance consisting of the sudden appearance of Q waves in leads II and III followed by their sudden disappearance, and one instance of the temporary appearance of right bundle branch block. Sometimes significant electrocardiographic changes are not observed and the question arises whether or not to obtain records with the patient exposed to anoxia or after exercise. In our opinion there is a serious risk in so doing; we have always delayed in carrying out these tests until it was deemed entirely safe. Possibly because of this delay they were found not to be very helpful. The most useful procedure is to obtain records at very frequent intervals in the hope of capturing ephemeral alterations.

Definite evidence of a generalized systemic response which can reasonably be attributed to absorption of necrotic material from the heart is lacking. If frequent determinations of the white blood cell count and the sedimentation rate are carried out a pattern may be established which will furnish a clue to the diagnosis of myocardial necrosis. However, individual variation, reliability of technic, and the nonspecific character of these tests must be kept in mind in the evaluation of such results.

CLINICAL COURSE

The clinical course is usually very mild unless complications arise. Indeed, it is sometimes difficult to keep the patient under proper observation until such time as the symptoms are no longer regarded as a possible prelude to myocardial infarction. In some instances a series of attacks of pain over a period of a week or longer may make it seem likely that severe damage to the heart has occurred, but there may be no evidence of infarction. Complications may arise suddenly without warning or gradually in which case they may be declared solely by alterations in the

laboratory findings. It is the most frequent complication, but sudden death due presumably to ventricular fibrillation may occur.

TREATMENT

Treatment of the acute symptoms rarely presents a problem but expert judgment is required to avoid, on the one hand, instituting unnecessary measures yet, on the other, to take adequate precautions in view of the possibility of myocardial infarction developing. A period of observation is essential during which time it is desirable to obtain serial electrocardiograms and to determine if there is a systemic response to tissue necrosis. The patient may be allowed the freedom of a room but anything more strenuous should be avoided, including stressful diagnostic procedures. The individualization of treatment should be based not only on the initial clinical picture and the evolutionary changes which may follow but on such factors as the age of the patient, the nature and degree of underlying disease and disorders, and the feasibility of carrying out measures which might be recommended. Physical, psychological, and economic factors must all receive consideration.

The use of anticoagulant drugs will nearly always come up for consideration. In a relatively young and otherwise healthy person with mild symptoms, who is suffering an initial attack, the indications point away from rather than toward this therapy.

DISCUSSION

This attempt to distinguish a particular type of coronary heart disease differs from other such attempts in various respects or degrees. It resembles other attempts in that the symptomatology is anchored to the anginal syndrome on the one hand, and the myocardial infarction on the other. It differs in that it delimits a smaller but more homogeneous group of cases. Thus, it is far less inclusive than the syndrome "acute coronary insufficiency" described by Master and his associates.¹⁰ It excludes all instances where the principal predisposing factor is not coronary heart disease. It is assumed that symptoms are due to myocardial ischemia but as Blumgart and his associates¹² have shown so well different pathologic mechanisms may be involved.

It might be objected that the intermediate coronary syndrome may represent the premonitory phase of myocardial infarction and that a final diagnosis can be made only in retrospect. This objection leaves the clinician with the alternative of making a diagnosis of infarction before the fact. It is true that an initial diagnosis of the intermediate coronary syndrome will often have to be changed but this disadvantage is outweighed by the advantages. From the clinical point of view there can hardly be any objection to making a diagnosis based on the findings up to

the moment, it is better to wait until the evidence is adequate before making a diagnosis of infarction. Furthermore, by introducing a middle category the way is clear to define more sharply the anginal syndrome and myocardial infarction. We can eliminate such terms as status angiosus and atypical infarction. Increasing experience will lead almost surely to a sharper distinction between the intermediate coronary syndrome and myocardial infarction based on the initial signs and symptoms and this will pave the way toward better treatment.

The choice of a term to distinguish this middle group is important otherwise it will not win general acceptance. It should not have an anatomic or pathophysiologic connotation which might apply equally well to something else. Scherf and Golbey have emphasized this point with regard to the term coronary insufficiency. It is also better to introduce a new term than to attempt to redefine an old one.

SUMMARY

The intermediate coronary syndrome may be defined as a complication of coronary heart disease in the nature of an acute attack which is distinguishable from the anginal syndrome by an evaluation of the pain and distinguishable from myocardial infarction by the absence of the characteristic signs and symptoms of infarction. This syndrome is limited to cases in which the predisposing factor is coronary heart disease and the precipitating factors may be obvious or obscure. The characteristic clinical picture includes pain, nonspecific electrocardiographic changes, minimal or equivocal systemic effects and little if any evidence of circulatory failure.

Differentiation from the anginal syndrome is usually easy because symptoms either develop spontaneously or there is a dramatic decrease in exercise tolerance literally from one day to the next. Differentiation from myocardial infarction is based mainly on the absence of electrocardiographic alterations considered to be pathognomonic of myocardial infarction and the absence of systemic effects or a friction rub attributable to myocardial necrosis.

The clinical course is usually short and ends with recovery or the development of further injury, usually infarction. The treatment should include the relief of any obvious precipitating factor, the possible use of anticoagulant drugs and a period of observation beyond which complications are unlikely.

The advantages in differentiating this middle category of cases of coronary heart disease include (1) the possibility of defining more sharply the anginal syndrome and myocardial infarction and (2) the stimulation of interest in the early recogni-

tion and treatment of complications of coronary heart disease which are not likely to end in infarction

The term intermediate coronary syndrome would seem to meet the clinical requirement in designating these cases

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SPECIFIC ANTIBIOTIC THERAPY

From year to year more and more cases are failing to respond to antibiotics indiscriminately selected and administered in the treatment of infections. These facts point to the necessity for determining as quickly as possible by means of laboratory tests the causative organisms and their sensitivity to the available antibiotics. When this knowledge has been gained the most potent antibiotic or combination of antibiotics should then be employed in the treatment of the case.

—FRANK L. MELENEY M.D. and

BALBINA A. JOHNSON B.A.

in Surgery Gynecology and Obstetrics p 275 Sept 1953

GASTRECTOMY IN THE TREATMENT OF PEPTIC ULCER IN THE AIR FORCE

JULIAN A JARMAN *C 1 I USAF (MC)*
HERBERT V SWINDELL *Capt n, USAF (MC)*

THE criteria for gastrectomy in the patient with peptic ulcer have been agreed upon by surgeons all over the world for many years. In general there are six major indications: massive hemorrhage, gastric ulcer, obstruction, chronic recurrence, repeated hemorrhage, and intractability. Theoretically these indications are clear, but the proper interpretation in the individual case is often difficult. This is particularly true in military practice because of the intangible factor of motivation. There are some instances when one is forced to operate on a patient who is known to be poorly motivated for military service; however, one should never be guilty of doing an elective operation of this magnitude and later find that the patient was poorly motivated all the time. Every peptic ulcer patient being considered for an elective gastrectomy should have a thorough neuropsychiatric evaluation prior to operation, and if it is determined that the patient is poorly motivated and/or will not become adjusted to the service, separation from the service should be considered as the best definitive answer. Particularly in the military service, should definitive surgical procedures be reserved for the true medical failures and those cases where operation is urgently indicated to save a life.

MASSIVE HEMORRHAGE

The proper treatment of this condition is still controversial, as is reflected by the magnitude of articles in the literature in recent years. Ivy and others stated that most patients would respond to medical therapy and whole blood transfusions, but that a few (probably five percent) would bleed to death in spite of the best medical management. Holman reported a 13 percent mortality in 161 patients treated conservatively at the New York Hospital from 1932 to 1939. He stated that most patients could be easily controlled, but that there was a 50 percent mortality in two groups of patients: those who continued to bleed from 24 to 48 hours after being placed on strict medical management, and those who started to bleed in the hospital while under strict medical man-

agement Since 1940 it has been the hospital's policy to perform immediate operation on patients in these two groups, the result has been a drop in mortality to five plus percent in 257 patients Stewart and others³ and Welch⁴ have shown that early gastric resection definitely outweighs the risk from continued bleeding

In this day of blood banks and improved methods of conservative management, a combined medical and surgical program should realize the best possible results Daly and associates⁵ in 1948 reported excellent results with the use of phosphate buffer and topical thrombin, and in 1951 Cantor and co-workers⁶ reported almost equal control with absorbable gelatin sponge (gelfoam) and thrombin Bowers and Rossett⁷ treated 150 patients by combined medical and surgical management, with a mortality of 13 percent

The combined medical surgical routine advocated by Daly and others has been found to be a most excellent and satisfying method of control in these difficult to handle patients Control is usually immediate and when it is not it is readily obvious Also, of great importance, one is usually aware of fresh bleeding after control long before this unhappy situation is recognizable by the clinical picture Early surgical intervention should be resorted to if control of hemorrhage cannot be maintained Crohn⁸ in a collective review of the literature, recently reported a 10-percent average operative mortality in those patients operated on in the first 24 to 48 hours of bleeding, and a 25 percent average mortality in those operated on after 48 hours of hemorrhage It is pointed out that, for obvious reasons, patients over 40 years of age may be more difficult to manage conservatively Therefore, immediate surgical intervention should be considered in this group when the slightest indication of failure exists Crohn found a mortality of from 15 to 25 percent in hemorrhaging patients over 45 years of age treated medically, and advocated prompt operative treatment provided competent surgical care was available In the average surgeon's hands a patient will have a better chance for recovery and subsequent good health if gastrectomy is performed as an elective procedure under optimum conditions rather than as an emergency Therefore if hemorrhage is controlled, operation should be postponed until the patient and the surgeon are in the best possible condition for it, even though it is obvious from the onset that the patient should eventually be operated on

GASTRIC ULCER

In recent years the concept that gastric ulcer is primarily a surgical disorder has become widely accepted This belief developed mainly because there is no positive clinical or laboratory means of differentiating between benign and malignant ulcers It is not generally believed that benign ulcers if untreated will

undergo a malignant change but that a primary malignant ulcer may be treated medically and the opportunity for surgical cure lost. Marshall in 1953 reported a series of 411 consecutive gastric ulcers of which 15.8 percent were malignant. He stated that there was insufficient histologic evidence to warrant a conclusion that gastric ulcers present a greater disposition to malignancy. He believed however that secondary malignant degeneration would unquestionably occur in some chronic gastric ulcers but probably not in more than five to six percent. Ravdin and Horn in 1953 emphasized the fallibility of present diagnostic techniques and found at operation that 11 percent of 94 ulcers which had been clinically diagnosed as benign were actually malignant. They believed that upwards of 10 percent of chronically benign ulcers may develop a malignancy at the ulcer site. Ewing and Mallory stated that malignant degeneration rarely occurred in a benign gastric ulcer. The former stated that such an origin of malignant ulcer probably accounted for not more than two to three percent of gastric carcinomas.

An editorial has stated that the dictum that all gastric ulcers should be removed following confirmed diagnosis is rapidly losing its authority. Most internists and surgeons recommended at least a preliminary trial of medical management for a few weeks or months and some favored continuing medical treatment. The rather common belief that all ulcers of the greater curvature of the stomach are malignant is certainly not true. In Marshall's series of 346 benign gastric ulcers 10 (three percent) were on the greater curvature and of the 65 malignant ulcers two (three percent) were on the greater curvature. Only in the antrum and fundus was the incidence of malignant ulcer higher than that of benign ulcer.

It is believed that each case should be individualized and if the ulcer seems unquestionably benign clinically and radiologically a rigidly controlled medical program may be instituted. If the ulcer is benign there should be rapid relief of symptoms and roentgenographic evidence of healing within four to five weeks. If healing does not occur within this period surgical intervention is certainly indicated. On the other hand if healing takes place careful follow up should be carried out for from six months to a year. Any recurrence following apparent healing is an indication for surgical intervention.

OBSTRUCTION

Gastric retention occurs in about 25 to 30 percent of all patients with gastric and duodenal ulcers. Of this group however only 20 percent of those with gastric ulcers and 10 percent of those with duodenal ulcers have organic obstruction. With proper conservative management gastric retention in the remaining

patients disappears. Experience certainly teaches that every patient with pyloric obstruction should be given a trial of strict medical management. If the condition is not relieved, then operation is indicated.

CHRONIC RECURRENCE AND REPEATED HEMORRHAGE

Chronic recurrence and repeated hemorrhage as an indication for operation are observed together just about as often as each is singly. Individually, each indicates only a relatively mild need for operation and their occurrence together is hardly more of an excuse for surgical intervention. Jahiel¹⁴ stated that it is well established that a periodic pattern of attacks and recovery characterizes the natural history of uncomplicated peptic ulcer. Ivy and his associates stated it is uncertain whether repeated recurrence of hemorrhage in patients who are not under strict management should be an indication for operation. They further stated that studies have shown that after apparent cure, patients with bleeding ulcers tend to have recurrence of their ulcer with hemorrhage more frequently than do patients with nonbleeding ulcers. They emphasized that collected data from the literature indicates that subsequent hemorrhages are generally no more dangerous than the first. It is most important, however, not to confuse repeated small hemorrhages with massive hemorrhage.

Of course in a situation where a person is in the hospital so often that he is no longer effective on his job, something has to be done. In civilian life many patients who have a gastrectomy for these indications are in reality operated on at their request because of the nuisance of long periods of diet and repeated difficulties after breaks in their medical routine. In such instances, results will probably be satisfactory because the patient, realizing what he is getting into, is desirous of the operation and assumes part of the responsibility for the results. This is not true in military practice, however, because the government ends up with the full responsibility for the results. One should never lose sight of the fact that the responsibility for the health and subsequent effectiveness of the particular patient after surgical intervention rests with the surgeon.

INTRACTABILITY

Intractability appears to be an uncommon indication for operation in the Air Force. The typical intractable ulcer is one which recurs chronically and which does not respond to medical management during the acute episode or flares up as soon as strict medical management is relaxed. Many patients whose ulcers appear to be intractable will be helped by a change in their treatment or by the addition of psychotherapy to remove stress factors. Recently such a patient was seen at this hospital. A 23 year old man with two years' service, had had aerophagia

practically all his life and particularly in time of stress. Nine months prior to admission he had had episodes of epigastric pain and belching relieved by sporadic medical treatment. On arriving in Alaska leaving a young wife and seven month old baby at home his discomfort became pronounced. He reported to his dispensary where he was given aluminum hydroxide gel (amphogel) and was examined radiologically. The roentgenogram was negative but his symptoms became worse. He was then transferred to this hospital and treated with bed rest, a combination of phenobarbital and belladonna, aluminum hydroxide gel and milk and cream for one week, but his symptoms became more pronounced. Roentgenograms revealed a definite duodenal ulcer. Gastric analysis with histamine stimulation gave a peak of 79 free acid and 110 total in one hour. His pain became more severe, there were more episodes of vomiting and nightly retention ranged from 200 to 300 cc containing an average of 70 free and 95 combined acid. A gastric tube was passed and after three days of suction he felt better and seemed to be doing well on an aluminum hydroxide gel regimen, however 48 hours later he was again in trouble and complaining bitterly. At this time it was believed that the ulcer was probably intractable. In surgical consultation it was suggested that the stress of being separated from his family might be a factor in his failure to respond to apparently adequate medical therapy. Whereupon the gastric tube was replaced and the patient informed that if he responded quickly to medical treatment he would be sent back to the continental United States, but if not an operation would have to be performed. His outlook changed immediately to one of cheerful anticipation. Suction was continued for 48 hours at the end of which time he was again placed on a Sippy regimen. His recovery was rapid and without remission. The lesion healed and the patient was evacuated to the continental United States for further treatment and evaluation. The patient could have easily been operated upon and if he had been the result would most probably have been poor.

PRELIMINARY REPORT

In the fall of 1952 a long range study of patients with peptic ulcers who had gastrectomies in Air Force hospitals was inaugurated. It was hoped that a series of at least 200 cases could be obtained. To date only 59 have been collected, however, as these patients came from only seven Air Force hospitals and there are some 125 hospitals in the service, it is hoped that the original goal will eventually be reached. Thirty nine of these cases were in military personnel with one or more years elapsed since operation. Questionnaires were sent to these 39 patients and answers were received from 36 by March 1954. This report will be limited to a review of these 36 patients.

Thirty five were men and one a woman, the latter a captain in the Air Force Nurse Corps. Thirty one percent were officers and 69 percent were enlisted men. The ages ranged from 23 to 58 years, 31 percent falling between the ages of 23 to 29, 42 percent, between 30 and 39, and 27 percent being 40 years of age or over. Thirty six percent of the patients had less than eight years of service at the time of operation, and 64 percent had eight or more years. The average length of service was 11 years, with a spread of from one to 37 years. The average duration of symptoms prior to gastrectomy was four years, with a spread of from 0 to 12 years.

All patients presented at least one of the six major indications for surgical intervention discussed previously. For purposes of study the patients were divided into two groups—those having urgent indications and those with possibly questionable indications. Those with urgent indications—massive hemorrhage, gastric ulcer, and obstruction—comprised 52.8 percent of the patients. Those with questionable indications—chronic recurrence, repeated hemorrhage, and intractability—comprised 47.2 percent. Interestingly enough, many of the patients in the questionable group presented more than one of the three indications.

The operative procedures employed were numerous but Polya's operation or some modification thereof was the most frequent choice. Only nine patients (25 percent) were estimated to have had more than 75 percent of the stomach removed, and the remaining 75 percent were estimated to have had 75 percent or less of the stomach removed.

Half of these patients have been followed for more than one year postoperatively, and 28 (88 percent) were still on active duty. Of the eight patients no longer on active duty, three were normally separated and five were retired. The series is too small and the follow up too short to furnish conclusive data, but some points of interest have been derived.

In evaluating the results the patients were divided into three groups: group 1, those with excellent results; group 2, those with satisfactory results; and group 3, those with poor results.

Patients were considered to be in group 1 if they were on a regular diet and had absolutely no complaints. Group 2 comprised those well motivated patients who had mild dumping syndromes or other vague complaints, but who had not been deterred from continuing on active duty. Also included were those patients with those mild complaints who were separated from the service through normal channels but who were able to engage in a useful civilian occupation. One of this latter group was a pilot who re-

signed his commission because he was permanently grounded and who is now a civilian airlines pilot

Group 3 the remainder of the series comprised patients having severe dumping syndromes and proved recurrences, and included persons retired and pensioned because of persistence of their symptoms after operation or simply because he or she had had a gastrectomy. It is pointed out that a patient with an excellent medical result may be a military failure if he is retired from the military service and pensioned because of his operation. Certainly the results of an elective procedure which are the basis for retirement and pension should not be considered satisfactory. An example is one patient in this series a 30 year old technical sergeant with six and one-half years service who had a gastric resection because of repeated hemorrhage. A short time later he was presented to a physical evaluation board because his time of enlistment was up and he did not desire to continue on active duty. He was awarded a 50 percent permanent disability and now two years later is a civilian enjoying excellent health and a monthly Government check.

The results in 90 patients (56 percent) were classified as excellent in eight (22 percent) as satisfactory and in eight (22 percent) as poor. Therefore 78 percent of the entire group fell in either the excellent or satisfactory category a tolerable proportion but still less than that reported in the better civilian clinics. Milstein reported satisfactory results in 86.7 percent of 90 patients with gastrectomies followed out of 101 operated on between 1940 and 1947. Rauch in 1952 reported failures in only 10.4 percent of 702 patients operated on between 1940 and 1950. Harvey and others in 1953 reported excellent results in 85 percent of 394 patients followed for from five to 15 years.

Of interest but of no direct bearing on final results it was found that 91.6 percent of the 36 patients in our series smoked after the operation and 77.7 percent drank alcoholic beverages. All patients with excellent results were smokers. All of the patients believed that the operation was of either great or moderate value. Eighty three percent considered that the operation was of great value and 17 percent believed that it was of moderate value. As might be expected, all the patients with excellent results considered the operation of great value. Those who believed that they derived only moderate value from the operation were equally divided between the satisfactory and poor group.

Basically there are two factors which have the greatest influence on the results of definitive treatment of peptic ulcer patients. These are (1) proper selection of patients and (2) adequate surgery. If selection is careless even though the operation may be adequate the results are likely to be mediocre.

conversely, if selection is proper and the operation inadequate, similar results will be observed. If selection is proper and the operation adequate, the results should compare favorably with the highest standards.

In an effort to see if there was any relation between these two factors and the results obtained, the excellent and satisfactory groups were combined to form one group, designated "good."

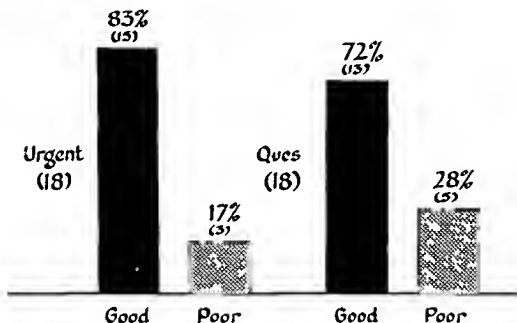


Figure 1 Relation between indications and results. There is a 12-percent differential favoring the urgent group.

Of the 19 patients who had urgent indications for surgical intervention, 16 (84 percent) had good results (either excellent or satisfactory), and three (16 percent) had poor results. Of the 17 patients with questionable indications, only 12 (71 percent) had good results and five (29 percent) had poor results, a difference of 12 percent favoring the urgent group (fig. 1).

Of the 23 patients with eight or more years' service, 19 (83 percent) had good results, and four (17 percent) had poor results. Of the 13 patients with under eight years' service, only nine (69 percent) had good results while four (31 percent) had poor results—a difference of 14 percent favoring the longer service group (fig. 2).

Only nine patients were estimated to have had more than 75 percent of the stomach removed; eight (89 percent) had good results, and only one (11 percent) had poor results. Of the 27 patients estimated to have had 75 percent or less removed, only 20 (74 percent) had good results, and seven (26 percent) had poor

results a difference of 15 percent favoring the more radical procedure (fig 3)

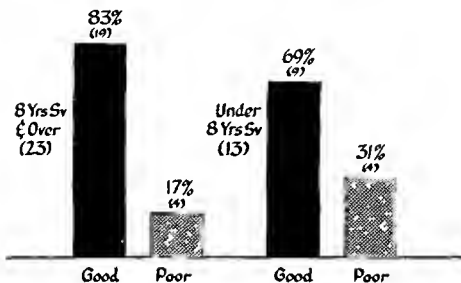


Figure 2 Relation between length of service and surgical results. There is a 14-percentage difference favoring the group with eight or more years of service.

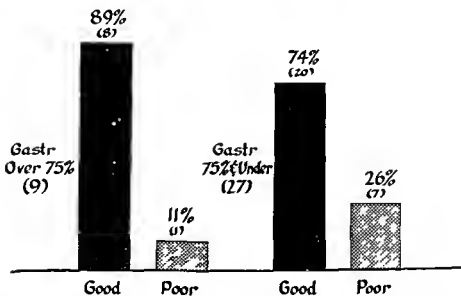


Figure 3 The relationship between the amount of tumor removed and surgical results. There is a 15-percentage difference favoring the group with more than 75 per cent of the tumor removed.

SURGICAL TREATMENT

The definitive surgical treatment of peptic ulcer patients should be aimed toward the physiologic reduction of gastric acidity and motility. This is best accomplished by resecting the acid forming portion of the stomach, neutralizing the gastric contents with duodenal contents, and/or interrupting the nervous innervation of the stomach.

Again using the large number of recent publications on the subject as an indication, the best method of accomplishing this end is still somewhat controversial. A gastric resection of 75 percent of the stomach or more seems to be the procedure most widely used. By present-day standards it gives uniformly excellent results in properly selected cases, with a minimum of mortality and morbidity. In cases where the acid response is unusually high and it is technically feasible, a resection of 80 to 85 percent of the stomach should be performed.¹⁸ If the psychosomatic component is pronounced it is believed that vagotomy is a valuable supplement to resection. The exact evaluation of the severity of the psychosomatic component is difficult to make and is determined to a great degree by experience. The type of person for whom a vagotomy is indicated is one who has been described as a "gastric personality." If the resection is technically difficult, division of the vagus nerves may permit a more adequate mobilization of the esophagus and gastric cardia, thereby facilitating a higher resection.

It is desirable to remove the ulcer itself whenever possible as it has been shown that if the ulcer is not resected postoperative recurrences are more likely. The American Gastroenterological Association¹⁹ reported that the response was favorable in from 81.2 to 89.1 percent of those patients whose ulcers were removed, whereas it was favorable in only 65.5 to 78.8 percent of those whose ulcers were not removed. It is not believed advisable however to risk injuring the pancreas and/or common duct by removing a densely adherent posterior penetrating duodenal ulcer, and a compromise should be effected in some cases. Lahey and Marshall²⁰ stated that mortality in partial gastrectomy, particularly in duodenal ulcer, was largely related to removal of indurated ulcers from the head of the pancreas. Dunphy and associates recently pointed out that postoperative pancreatitis was more common than is realized and that in many instances it was related to injury to the pancreas or its blood supply during gastrectomy. Whenever it is advisable to leave the pylorus or portion of the antrum for these reasons, the mucosa should be excised.

DISCUSSION

Re-evaluation of the entire problem of the surgical treatment of peptic ulcer illustrates that the proper selection of patients is the

primary factor governing the satisfactory response to a gastric resection. This small series certainly indicated this to be true. Secondary to this but still of major importance the degree of resection exerts influence on the end result. Recent reports^{1,2} have advocated lesser degrees of resection combined with vagotomy. These procedures are still in their infancy but may eventually prove to be procedures of choice. Until such a time however it is believed that surgeons in the Air Force should continue with the time-proved procedures if any uniformity of over all results is to be achieved.

This series indicates that the over all results in the Air Force Medical Service so far are fairly adequate. It is believed however that if more rigid selection of cases is employed the results may soon approach those obtained at the better civilian institutions. In military practice the problem of motivation is of much more importance than in civilian practice and should be thoroughly explored before this type of operation is undertaken. In many cases when motivation is in doubt it might be better to deal with the patient administratively rather than surgically.

SUMMARY

Analysis of a series of 36 patients with symptoms of peptic ulcer showed that indications for operation in 52.8 percent were urgent (massive hemorrhage, gastric ulcer and obstruction) and in 47.2 percent were questionable (chronic recurrence, repeated hemorrhage and intractability).

In evaluating the possibility that the combination of proper selection of patients and an adequate surgical procedure might be determining factors in obtaining favorable results from operation it was found that (1) a 12 percent differential favored those patients whose indications for operation were urgent and (2) a 15 percent differential favored those patients who were estimated to have had more than 75 percent of the stomach removed.

We believe that the main surgical considerations in the treatment of these patients in addition to the above factors are the physiologic reduction of gastric acidity and motility (best accomplished by resection of 75 percent of the stomach or more), removal of the ulcer itself if possible and if the psychosomatic component is pronounced a supplemental vagotomy.

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ADDENDUM Since this article was submitted for publication, a total of 132 cases have been collected which will be reported in a subsequent communication

Our responsibilities to our juniors are great and it might be well if we worried more about how much we are doing for them and less about how much they are doing for us

—JAMES T PRIESTLEY M D
in *Archives of Surgery*
p 139 Aug 1954

KOREAN VIVAX MALARIA

A Statistical Analysis of 95 Patients

LOUIS A HALL *L u t n a n t 1 s t M a j o r (MC) USNR*

IN ONE of their excellent series of studies of human malaria published in 1950 Coatney and associates explained the life pattern of the St. Elizabeth strain of vivax malaria. They used data compiled from 1949 to 1947 from 195 patients intentionally infected with this strain. One of the most significant results of these studies was discovery of the fact that there was an early invasion of the blood stream during the second week after exposure. Following this there was a latent period of nine to 10 months, after which a period of repeated relapses occurred with blood stream invasion. This latency is a good illustration of adaptation for survival allowing this temperate zone strain of *Plasmodium vivax* to survive the cold winter months and continue its life cycle through the mosquito and man during the next infective season. In Korea as Kehoe and Chandler have pointed out, this period is from April through October.

A few months later when a large number of United Nations troops became involved in the Korean conflict the value of this and other similar work became apparent. Korea is an endemic area for *P. vivax* temperate zone variety. Consequently suppression of the initial clinical attacks of this disease was deemed to be important in the maintenance of a healthy fighting force. The suppressive drug chosen for this purpose was chloroquine phosphate, one of the 4 amino-quinoline compounds developed during World War II. This was administered to each man in a dosage of 0.5 gram per week and proved very efficacious in the suppression of the initial attacks.

Unfortunately the whole problem was not solved as the nine to 10-month latency period of this disease before remission into the repeated erythrocytic stages provided time for the transfer of large numbers of veterans back to this country. With the loss of incentive for continuing prophylactic medication the suppressive drug was dropped and concurrently the malarial attack rate in 1951 began to rise in this country. There was an

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estimated total of 12,000 cases of malarin¹ in Korean veterans in this country during 1951 alone

A number of papers²⁻⁴ reviewed the case histories of veterans who manifested the disease after returning to this country. These reviews, covering from a few to as many as 215 cases, showed that the disease had a fairly characteristic course. The amount of anemia and the differential counts accompanying the illness were about the only points on which authors varied to any great extent. The diagnosis was considered to be fairly easy by one group,² whereas Hale and Halpenny⁴ were of the opinion that it frequently presented a diagnostic challenge.

TABLE 1 *Patients with Korean vivax malaria at USNH Oakland*

Year	Number of patients	Number of attacks	Number of patients with recurrent attacks
1951	30	41	8
1952	25	28	3
1953	40	42	2
Total	95	111	13

One patient had four recurrent attacks of malaria.

The following review incorporates the histories, findings, treatment, and diagnostic problems encountered in 111 attacks of malaria in 95 patients seen at this hospital over the three year period from January 1951 to January 1954. In many instances these attacks have been described collectively, but where significant differences arise they have been compared on a yearly basis. In this way the general nature and course of the disease as well as the progress in treatment during the three years can be ascertained, and future problems that may be encountered will become more evident.

PATIENTS HISTORY

Table 1 shows the number of patients studied, on a yearly basis. The number of recurrences listed were only those seen at this hospital. As no long term followup was made in these cases the exact number of recurrences is not known. Eighty one patients, presenting 86 attacks, were admitted here primarily for malaria; the other 25 attacks occurred either in the 14 patients who were in the hospital for unrelated conditions, or were recurrences in the first group while they were convalescing from the previous attack.

The patients were all men between 17 and 43 years of age. Seventy percent of them were between 19 and 23 years of age. The fact that no Negroes were seen here with the disease is quite significant considering the ratio of Negro to Caucasian soldiers in the endemic area. However the Negro race shows an apparent immunity to tertian malaria and very few of the previously reported patients have been members of this race.

TABLE 2 Time of onset prior to admission

Days	Number of attacks
> 1	2
1	8
2	13
3	24
4	7
5	6
6	3
7	9
8-14	9
15-21	3
22-28	2
86	ks 81 p dm d p mainly f mal in

Eighty-two of the patients were marines, seven were veterans, two army personnel, and four sailors. One of the last denied ever being closer to Korea than 2,500 yards offshore, which made his mode of infection rather speculative.

The average period of latency could not be determined in this group because the time of infection was unknown. It is interesting to note, however, that 16 patients had been away from Korea for 11 months or longer. One man had returned 18 months previously but had had a clinical attack of malaria 16 months before the present admission.

Twelve of the 30 patients seen in 1951 had had one or more previous clinical attacks of Korean malaria before being seen at this hospital. In 1952 five patients had suffered previously from this disease while in 1953 only three of the 40 patients had been stricken previously. The decreasing incidence year

by year was probably due to increasing recognition on the part of the troops of the importance of scrupulously taking their suppressive medication, at least while in the endemic area.

Table 2 indicates the length of time these patients were symptomatic before they were admitted. In those with symptoms for over six days the onset was generally gradual and not accompanied by acute and sudden chills and fever, as is more characteristic of the disease. In many of those patients also, the characteristic exacerbations of symptoms every 48 hours were absent, or at least did not occur until shortly prior to admission. The periodicity of symptoms in this disease in 83 attacks is shown in table 3. As is evident from the table, a significant number of the attacks (35 percent) did not demonstrate the typical pattern of fever, chills, and accompanying symptoms occurring every 48 hours and lasting two to four hours each time. This was a definite factor, as will be discussed later, in causing difficulty in diagnosis. The fact that in 28 attacks the frequency of symptoms was not elicited did not give rise to many problems, because those attacks had been diagnosed as malaria before admission, and a less extensive history was taken than in those instances where the diagnosis was in doubt.

TABLE 3 *Periodicity of symptoms*

Periodicity	Number of attacks*	Percent
Daily	22	26.5
Every other day	54	65.0
Every third day	5	6.0
Every fourth day	1	1.2
Every fifth day	1	1.2

* Based on 83 attacks

The symptoms and complaints were many and varied, and have been tabulated in table 4 in the order of frequency. Shaking chills, followed by a high fever, were present in all attacks except that of one patient who did not have chills. Although not a complaint, all the attacks seen here were accompanied by profuse sweating during the period of fever. The headache in practically all instances was retro-orbital or frontal and generally very severe.

the normal range of hemoglobin determinations, 18.7 percent showed significant anemia. Considering 12 to 14 grams per 100 ml as low normal, 57.5 percent of the cases fell in this classification. Only 23.8 percent of the cases showed definitely normal hemoglobin levels.

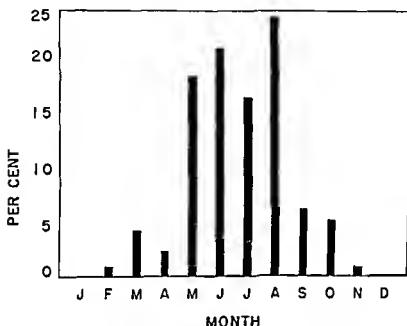


Fig. 1. Monthly rate of occurrence of 111 attacks.

The erythrocyte sedimentation rate was measured in only 50 attacks and showed an elevation of over 10 mm per hour in 70 percent of these.

Urinalyses were recorded in 103 attacks. 25.2 percent showed pyuria with more than five leukocytes per high power dry field. Only two specimens showed hematuria and six minimal albuminuria.

The number of positive serologic tests varied year by year. In 1951, those patients with 95.6 percent of the attacks had positive serologic tests; this rose to 69.2 percent in 1952 and fell to 5.0 percent in 1953. In all cases it was believed to be a false positive reaction due to the malarial infection. With newer techniques, however, such as the cardiolipin test as proposed by Kent and others, the incidence of false reactions was greatly decreased by 1953. There was no relationship ap

parent between the time, during the course of the illness, that the blood for the serologic test was drawn and the number of false positive reactions which occurred

Studies of liver function were done in 13 attacks with seven showing various degrees of damage, especially by the cephalin cholesterol flocculation method, and six showing no damage

TABLE 6 *Physical findings in 111 attacks*

Physical findings	Number of attacks	Per cent
Splenomegaly	31	28.0
Hepatomegaly	13	11.7
General adenopathy	11	10.0
Pharyngitis	7	6.3
Herpes simplex	7	6.3
Jaundice	5	4.5
Conjunctivitis	5	4.5
Pneumonic rales	4	3.6
Heart murmur	4	3.6
Costovertebral angle tenderness	4	3.6
Left upper quadrant tenderness	3	2.7
Nuchal rigidity	3	2.7

All findings limited to 52 per cent of the attacks 48 per cent without symptom

The malarial smears here were all treated with Wright's stain, and were thin smears. The reason for this was that they were generally done by student technicians who, because of limited time, are taught only this method for staining and making peripheral blood smears. As a result (table 8), a large number of attacks were prolonged because smears were read as negative.

It was found, however, that the largest number of trophozoites in the blood stream seemed to appear between the stage of the chill and fever or as the temperature began to rise, and the highest percentage of positive smears was obtained during that time of the attack.

TREATMENT

In 1951, two drugs were mainly used to combat this disease—amodiaquin hydrochloride (camoquin hydrochloride) and chloroquine phosphate, both suppressive agents. The results obtained were excellent with respect to controlling the clinical attack,

TABLE 7 P ph l bl d f m d g s d all d d a i t a k

Wh bl d ll			Dff l			H m gl b		
C un p mm	Numbe f ta k	P	Typ	Numbe f x	P	G m p 100 ml	Num b f x k	P
23 000	2	22	N l	39	410	8	0	00
3-4 000	11	120	L f b f	15	158	889	2	25
4-5 000	17	184	L y ph y b 40 p	29	305	9-97	3	375
5-6 000	15	163	M y b 6 p	7	74	10-109	2	25
6-7 000	12	130	E ph l b 4 p	5	52	11 119	8	100
7-8 000	8	87				12 129	18	225
8-9 000	9	98				13 139	28	350
9-10 000	12	130				14 149	16	200
10-11 000	2	22				15 159	3	375
11-12 000	1	11				16	0	00
12-13 000	1	11						
13-14 000	2	22						
T l	92	1000	T f	95	999	T ml	80	1000

for these drugs destroyed the hemoparasites. Due to the fact that the tissue forms were unaffected, however, the recurrence rate as seen here was rather high. In 1951, eight of the 30 patients had a recurrence from two weeks to three months following treatment of the initial attack, and one of those patients had three recurrent attacks at monthly intervals. The dosage of amodiaquin hydrochloride was 0.6 gram given in one day, while that of chloroquine phosphate varied from 0.5 to 4.0 grams administered over a three day period. Also three patients were treated with quinine and quinacrine hydrochloride (atabrine hydrochloride). If the recurrence occurred after amodiaquin

TABLE 8 *Time in hospital before obtaining positive smear*

Number of days	Number of attacks*
Before admission	17
Day of admission	47
1	12
2	3
3	10
4	4
5	4
6	0
7	1
8	2

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hydrochloride was given, chloroquine phosphate was used the second time, or vice versa. Long term followups are not available but according to previous reports,¹¹⁻¹⁵ the disease is limited to about three years. Therefore, if each attack is treated, the time for recurrence should be increasingly prolonged.

In 1952, there were only three recurrences in 25 patients. Treatment that year was essentially the same as in 1951, 15 receiving 0.6 gram of amodiaquin hydrochloride, nine receiving from 2.5 to 4.5 grams of chloroquine phosphate in divided doses, and one receiving 8 grams of amodiaquin hydrochloride in all and

15 mg of primaquine diphosphate daily for 14 days. The efficaciousness of the last drug was just becoming known about this time. It is probable that the recurrence rate was higher than is apparent in this report although the subsequent attacks were treated elsewhere.

In 1953 when primaquine diphosphate had become obtainable and had been proved to be curative for malaria,¹¹ a routine mode of treatment was established when the seasonal attacks began again. This consisted of 1 gram of chloroquine phosphate initially followed in six hours by 0.5 gram and then 0.5 gram a day for two days. A daily dosage of 15 mg of primaquine diphosphate was then instituted for 14 days. It also had been shown¹ that primaquine diphosphate destroyed the tissue forms but did not alleviate the present clinical attack as rapidly as did the suppressive drugs especially chloroquine phosphate; thus the combination of the two was used. Two of the 40 patients seen that year however received only chloroquine phosphate for their initial attack but both suffered recurrences within the month and the established treatment was then used.

Treatment by all of these methods proved dramatic in alleviating the symptoms of the clinical attack but it is now possible with the method of treatment used in 1953 regularly to cure a person affected by this disease. Johnson for example found a 1.06 percent recurrence after this mode of therapy, as compared to 30.6 percent following the administration of chloroquine phosphate alone.

DISCUSSION

The number of cases of Korean malaria in this country at present should gradually decrease year by year. As already indicated in this article however the problems presented by this disease have been rather considerable in the past and some may well continue to be important in the future.

The problem of diagnosis proved to be a major one at this hospital. The diagnostic acumen (fig 2) progressively became less until in 1953 only 49 percent of the cases seen were initially diagnosed either as malaria or more specifically as *P. vivax* malaria. The course of this disease is fairly typical and yet due to variance in one factor or another, it was diagnosed as having a cause other than the parasite *P. vivax* in as much as 50 percent of the number of cases each year.

The main factors responsible for mistaken diagnoses were the histories of these patients. The long latency period, the fact that the patients may have been in this country as long as 16 months was one important point. The similarity of this dis-

ease to other illnesses is evident from the initial diagnoses (table 5), and when certain symptoms more characteristic of diseases other than malaria were of prime importance to the patient, the attention of the examining physician was often diverted from the over all clinical picture. The fact that in 35

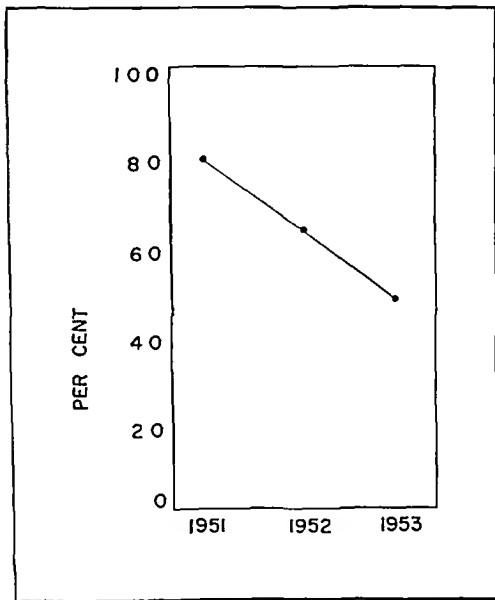


Figure 2 Percent of attacks per year diagnosed as malaria.

percent of the attacks the symptoms did not conform to the textbook description of occurrence every 48 hours, with relative freedom from difficulty between attacks, further contributed to inaccurate diagnoses.

Because the physical findings in this malady are so few, there is no indication, from examination of the patient, of the diagnosis, except for splenomegaly, unless one considers the dis

similarity in number and severity between the symptoms and signs

The problem of obtaining positive malarial smears even during the acute phase was a large one, and caused delay in treatment in many of the patients. The technic of using thin smears and Wright's stain was not adequate therefore other methods, such as thick smears with Giemsa's method as proposed by Johnson should be used

TABLE 9 Extra diagnostic procedures performed

Procedure	Number
Lumbar puncture	11
Blood culture	39
Urine culture	4
Fecal egg	8
Histopathologic	11
Rectal biopsy	2
Splenulogram	2
Thrombocytogram	3
Electrocardiogram	1
Penicillin-bound	1
Liver function studies	13

Eight patients had both malarial and bacterial infections

Further evidence of difficulty in diagnosing this disease is indicated by the large number of extra diagnostic procedures done in these cases (table 9) all of which were negative except for the studies of liver function as previously noted

The problem of treatment has now been practically solved although of course search for newer and better drugs will continue. The routine use here of chloroquine phosphate and primaquine diphosphate caused no side reactions in the 40 patients who received these drugs and indeed our experience coincides with previous reports and work on the minimal toxicity.¹

CONCLUSIONS

Korean vivax malaria has now become an entity which should become less and less of a problem in this country. The armed

services have instituted a new mode of prophylactic treatment whereby veterans returning from Korea are placed on a 14 day treatment with 15 mg of primaquine diphosphate daily, which should be sufficient to eliminate the tissue forms these men may be harboring

A few veterans, however, can still be expected to miss the therapy and develop the clinical symptoms after their return. From findings and diagnostic problems encountered here it seems likely that these patients may present difficult diagnostic problems, especially to a physician who has not had previous experience with this malady

To solve the problem, the following should at least raise the suspicion of the examining physician. The patient is a white male veteran with previous duty in Korea. He complains of chills, fever, headache, generalized aches, and/or other varied symptoms. Those usually occur every other day. Physical findings are probably nonexistent, with the exception that he may have splenomegaly. The white blood cell count is normal or low, the differential count nonspecific. There may or may not be a slight anemia. If malaria is then suspected, it can be confirmed by a thick peripheral blood smear treated by Giemsa's method. At present, the treatment of choice is 1.0 gram of chloroquine phosphate initially, followed by 0.5 gram in six hours and 0.5 gram daily for two days. Primaquine diphosphate is begun also on the first day in a dosage of 15 mg and carried through for 14 days.

The patient will respond rapidly to treatment and need not be hospitalized. The waste in manpower, as previously caused by this disease, can be eliminated. At this hospital alone, the 95 patients admitted for tertian malaria represented 1,346 days lost to active service.

The experience we have had with this variety of tertian malaria should serve as a warning to physicians in this country in the future. Our progress in methods of travel, with the consequent increased accessibility of other parts of the world, is bringing us closer and closer to diseases not before affecting the inhabitants of the United States. The scope of medical knowledge can no longer be limited to diseases common to our own environment, but must embody more and more those afflictions common to distant lands. Therefore, research concerning the treatment of these diseases may give us a cure for them before they become such major problems, both to the nation as a whole and to such groups as the armed services in particular, as has vivax malaria.

SUMMARY

A review of Korean vivax malaria during the years since the onset of hostilities in that country has been presented with the histories physical and laboratory findings and treatment of the 111 episodes in 95 patients seen at this hospital which have been used statistically to add further weight to the subject.

The problems of diagnosis and treatment encountered have been discussed and conclusions from the study and from previous reports concerning this disease have been drawn.

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NEW TRENDS IN THE TREATMENT OF TUBERCULOSIS

Analysis of 1358 Records From a Large Army Hospital

ROBERT L. MAYOCK *Captain, MC, USA*

RICHARD M. BURKE *Lieutenant Colonel MC, USA*

CHARLES T. PINNEY *Major MC, USA*

LLOYD J. GREGORY *Major MC, USA*

JAMES A. WIER *Lieutenant Colonel MC, USA*

WITHIN the past five years many changes have occurred in the management of tuberculosis. These changes have developed gradually and subtly, and are largely the result of a growing understanding of specific chemotherapy. The better results obtained with this therapy have made pneumothorax, pneumoperitoneum and extremely long periods of hospitalization less necessary. Chemotherapy has made it possible for surgeons to operate on lungs infected with tuberculosis with relative safety. Through cumulative experience, surgical technic has been improved especially in segmental resections. Present treatment regimens, however, are far from crystallized and older opinions are constantly being re-evaluated. For this reason it is believed worth while to review the present-day management of tuberculosis at this hospital through its annual report.

In addition to purely medical problems, there are many administrative problems associated with the treatment of military personnel for tuberculosis. Decisions must be made for military personnel in regard to the advisability of their temporary or permanent retirement from service, the feasibility of their treatment in Army hospitals, the amount of physical activity they are permitted on return to duty, and the potential danger of relapse. We believe that it is important for members of the medical services to be aware of the basis for these decisions and will discuss these specialized aspects of the tuberculosis problem as part of this report.

The preparation of this report has been greatly aided by the use of the punch card described in a previous issue of this *Journal*.¹ This card has facilitated the handling and sorting of the large volume of data so that a careful evaluation could be made

From Fitzsimons Army Hospital, Denver, Colorado. Captain Mayock is now at Hospital of the University of Pennsylvania, Philadelphia, Pa.

TABLE I. Data for the β decay of ^{10}C and ^{10}B in the ^{10}C and ^{10}B isotopes. The data are taken from the literature [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100].

E f f t	M u l t y		C l d p d e		V e		T t	
	N m b	P e e	N m b	P e	N m b	P e	N m b	P e
M m a l	137	26.8	30	19.7	25	8.9	192	20.3
M d t l y d	273	53.5	78	51.3	117	41.5	468	49.5
F d d	102	19.9	44	29.0	140	49.6	286	30.2
T t l	512	100	152	100	282	100	946	100

MATERIAL

The patient population of this hospital consists of three different groups: military personnel, dependents of military personnel, and beneficiaries of the Veterans Administration. Some what different medical and administrative problems were present in each group and had considerable bearing on the handling of each group. The military patients were in large part young men

TABLE 2 *Distribution of patients discharged from the tuberculosis section, by type of disease 1952 and 1953*

Diagnosis	1952		1953	
	Number of patients	Percentage	Number of patients	Percentage
Nontuberculous	239	16.8	207	15.2
Tuberculous	1184	83.2	1151	84.8
Active tuberculosis	(1097)	(77.1)	(1079)	(79.5)
Inactive tuberculosis	(87)	(6.1)	(72)	(5.3)
Total number	1423	100	1358	100
Active pulmonary	946	86.2	946	87.7
Plurifusionaly	115	10.5	97	9.0
Extrapulmonary	36	3.3	36	3.3
Total	1097	100	1079	100
Active pulmonary tuberculosis				
Minimal	175	18.5	192	20.3
Modestly advanced	486	51.4	468	49.5
Far advanced	285	30.1	286	30.2
Total	946	100	946	100

with relatively recent disease, which developed since the chest roentgenograms made at the time of entry into military service. The civilian dependent patients were for the most part young wives of servicemen. They, therefore, represented a good cross section of all stages of tuberculosis.

Through a contract with the Veterans Administration, 240 beds for veterans with tuberculosis were provided at this hospital. These patients were usually older men who had a high incidence of far advanced cavitory disease (table 1). Frequently their place of residence was hundreds of miles from Denver, and many were recalcitrant patients who had left other hospitals.

TABLE 3 *D i b t f p t t w t h t b u l u s d d m t t d w t h*
g l d g o f t b u l s

D i g n	Y	
	1952	1953
1 I f ad quel		
F b d/ l f cat p l m n a y und m d	40	36
b Pulm n a y m y d		
C id d m y	28	10
H pl m	16	18
O h fung	0	2
B h	24	16
d P umo	34	13
Pl ur y h ffus no ub ul	4	3
f Bro h hr	3	3
g Abs lung	3	1
b Pl ur hr n i be ul	3	3
Lymphad p h y m d i a n a l	3	0
j Emphy m pulm n a y	3	3
k Par g m a	1	0
l Emphy m	0	2
m C ul m u s und m d	0	11
2 P um n i (d l)	3	3
3 T m ad y t		
a N pl m lung	4	10
b B h y	1	4
4 All g d d	1	1
5 Co g n i t a l n o m a l d e r u r l h g		
A h l s o p h g u s	1	0
b P um b p u s	3	2
6 T u r n		
H m m a l g	5	1
b F h e p l r a	1	1
F u r e d b w h u m a p m	0	1
7 F s b o d i e p u r		
L p a d p m	1	1
b F g b d y a d j f l w l b b h	1	0
8 B l o o d u l d u l r y d d		
E m b i m p u l m o n a y w h f	4	0
b V u l m l y g h u p p l b e	1	0
H m p y u s und m d	2	2
9 D u n k w		
S d	1	5
b X h o m a	0	1
10 A r t a n s h a d w	0	0
11 C m b d l		
I n a b e u l w h h p u l m n a r y d	7	0
b I n a b e u l w h p u l m n a y b e u l u s		
d	4	7
12 U l f e d d h l		
O r v a, m d l p u l m y d n o f u n d	31	20
b N p u l m o n a y d b p u l m n a y d i	6	15
U d i a g n d i	0	12
T l	239	207

against medical advice. Their management was very difficult because of the severity of their disease and behavior.

The different results obtained in these groups of patients will be shown in this report. The results obtained in 1953 will be compared with those reported for 1952. All of the terms pertaining to tuberculosis used in this report are in strict accord with the definitions used by the National Tuberculosis Association (NTA) Standards. Such terms include active, arrested, inactive, "good chronic" ^{1, 2}

RESULTS

During 1953, 1,358 patients were discharged from the tuberculosis service of this hospital (table 2). All of these patients were suspected of having tuberculosis, because patients in whom tuberculosis was not the diagnosis on admission were sent directly to the nontuberculous chest disease section. Of these 1,358 patients, 207 or 15 percent were found not to have tuberculosis. As shown in table 3, the incidence and type of non-tuberculous diseases were similar in 1952 and 1953.

As shown in table 2, 72 patients (5.3 percent) were discharged in 1953 as having inactive tuberculosis on admission. The remaining 1,079 patients (79.5 percent) were considered to have active disease. Of the patients with active tuberculosis, 87.7 percent had pulmonary disease, nine percent had pleural effusion alone, and 3.3 percent had extrapulmonary tuberculosis. Of the patients with active pulmonary tuberculosis, 20.3 percent had minimal disease on admission, 49.5 percent, moderately advanced, and 30.2 percent, far advanced. These percentages closely parallel the 1952 figures.

Table 4 shows the final disposition of the patients with pulmonary tuberculosis.

Military Patients. With few exceptions the military patients shown in the "other" category were transferred to Veterans Administration hospitals before completion of treatment. "Irregular" discharges (defined as the unco-operative patients who either left against advice or were discharged for failure to follow treatment) were very low (1.3 percent) due to Army disciplinary powers over service personnel. Because these persons were AWOL, their eventual return was almost certain. When military patients were released to the Veterans Administration without the restraint of military discipline, irregular discharge rates in several institutions were alarmingly high (50 percent) ^{4, 5}. The irregular discharge rate for veteran patients other than military transfers was 15 percent in one of these hospitals. ⁴ The small number of deaths was due in part to the fact that most of the patients had early disease.

Veteran Patients Two factors were noteworthy here (1) a high irregular discharge rate (43.5 percent) and (2) the comparatively high mortality. There was some improvement in irregular discharges over 1952. A minor reason for this improvement may have been the patient's realization that more effective therapy than prolonged bed rest was available. The higher death rate was not unexpected in this older group which includes many patients with advanced chronic pulmonary disease.

Dependent Patients This group was most representative of the average civilian sanatorium. Their death rate was low. Irregular discharges were relatively few, reflecting the more cooperative attitude of women patients.

TREATMENT

Hospitalization We still believe that the treatment of a patient with tuberculosis is best accomplished in a hospital or sanatorium. Initial hospitalization is almost always necessary for proper medical evaluation and bacteriologic study. In addition, the danger to others by permitting the patient with positive sputum to remain at home makes hospitalization early in the disease extremely important. This is the general belief throughout the country where adequate facilities are available. However, the length of hospitalization has gradually decreased. At this hospital the average patient with minimal disease treated to the inactive stage is now hospitalized from 11 to 15 months, with moderately advanced disease from 12 to 18 months, and with far advanced disease at least 15 months. The major discharge criterion is inactive disease, which means cavity closure, negative sputum, and roentgenogram stability for six months. Out-patient treatment is recommended only to complete drug therapy after the disease has become inactive or reached the good chronic stage.

Bed Rest Strict bed rest is employed only for patients with symptoms or those not responding to therapy. Following this period (usually from two to three months), modified bed rest is employed with gradually increasing activity until discharge.

Specific Therapy Specific treatment has been analyzed in tables 5 through 8. It must be borne in mind that the treatment here presented represents for the most part that used in 1951 and 1952, because the patients treated then were discharged in 1953. Changes in therapy which have occurred since 1952 will be discussed later. Table 5 presents the general types of therapy employed in patients discharged as inactive in 1952 and 1953. Only one patient with active tuberculosis was placed on bed rest only in 1953, because he was hypersensitive to the drugs used.

TABLE 4 Distribution of patients with active tuberculosis by type of patient and disposition, 1952 and 1953

Type of disposition	Type of patient												Total			
	Military				Veteran				Civilian dependent							
	1952		1953		1952		1953		1952		1953		1952		1953	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Discharged with maximum loss of weight (inactive and chronic) regular discharges	383	61.8	335	53.2	99	30.3	111	38.0	83	55.3	105	66.9	565	51.5	551	51.1
Deaths	12	1.9	8	1.3	179	54.7	127	43.5	40	26.7	26	16.6	231	21.1	161	14.9
Other (transfers to other hospitals and discharge)	5	.8	1	.1	28	8.6	21	7.2	2	1.3	3	1.9	35	3.1	25	2.3
Total	220	35.5	286	45.4	21	6.4	33	11.3	25	16.7	23	14.6	266	24.3	342	31.7
	620		630		327		292		150		157		1097		1079	

TABLE 5. Distribution of the number of species in the different types of communities in the different years of the study.

Type	A mal				Mod m				F d v a d				T tal			
	1952		1953		1952		1953		1952		1953		1952		1953	
	Num- be	P	Num be	P r	N m b	P	N m b	I	Num b	P	Num be	P	N m b	P r	N m b	P
R ly	5	39	1	8	0	0	0	0	0	0	0	0	5	12	1	2
R d &	58	45.3	82	66.2	37	14.7	50	20.7	3	5.8	16	21.6	98	22.7	148	33.7
R d &																
P r y l	41	32.0	22	17.7	159	63.4	100	41.5	31	59.6	41	55.4	231	53.6	163	37.1
R d u g																
R d w g l	24	18.8	19	15.3	55	21.9	91	37.8	18	34.6	17	23.0	97	22.5	127	29.0
T l	128	100	124	100	251	100	241	100	52	100	74	100	431	100	439	100

P w hyp d & us d

Drugs The drugs usually used were one or two grams of streptomycin (SM) every three days, combined with 300 mg of isoniazid (INH) daily, or 12 grams of para aminosalicylic acid (PAS) daily. Two hundred and twenty five patients were treated with rest and drugs to the inactive stage. This includes 118 patients with pulmonary disease (table 5) and 77 patients with pleural effusion or other forms of tuberculosis. Ten who received drugs up to four months, had reactions severe enough to warrant discontinuance of the drugs. Sixty three patients received chemotherapy for from four to eight months, 102 patients, for from eight to 12 months, 44 patients, for from 12 to 18 months, and six patients, for 18 months or more. When these patients were treated (1952), drug therapy for from six to eight months was considered adequate. This duration has gradually lengthened and chemotherapy for one year is believed the minimum duration for patients who have responded well (see discussion).

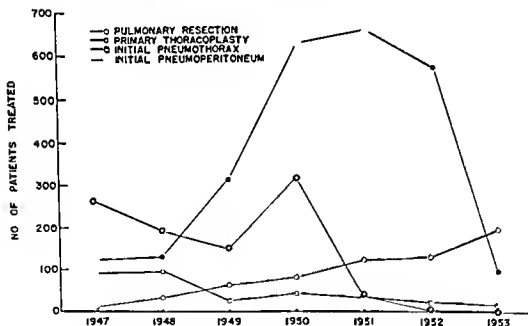


Figure 1 Trends in treatment of patients with pulmonary tuberculosis. About the same number of patients were treated each year.

Temporary Collapse and Surgery The changing nature of the therapy in tuberculosis has been emphasized above. Pneumothorax was completely abandoned by 1952 partly because of the high rate of complications and partly because good results have been obtained by other less prolonged more successful methods of therapy. Pneumoperitoneum had a brief period of popularity but it is also on the decline because of the clinical impression that it has contributed little to the better results which are being obtained.

TABLE 7 *Distribution of patients with active tuberculosis by result of treatment 1952 and 1953*

Result	Veteran				Civilian dependent			
	1952		1953		1952		1953	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Successful (inactive stage)	81	26.5	89	34.4	77	61.6	100	74.6
Unsuccessful	225	83.5	170	65.6	48	38.4	34	25.4
Good chronic	18	5.8	22	8.5	6	4.8	5	3.7
Deaths	28	9.1	21	8.1	2	1.6	3	2.3
Irregular discharges	179	58.6	127	49.0	40	32.0	26	19.4
Total	306	100.0	259	100.0	125	100.0	134	100.0

TABLE 8 D r b t f p t t w t h u b l u b d d b y c u s f d i b 1952 d 1953

C f d h	1952		1953	
	N m b e r	P t	N u m b	P t
S u r g e r y (t t l) O p e r a t i o n s E n d o c r i n e L i t e r a t u r e	5	143	2	80
	0	0	0	0
	2	57	2	80
	3	86	0	0
M e d i c i n e (t t a l) N e u r o l o g y T u b e r c u l o s i s M e d i c i n e P e d i a t r i c P u l m o n a r y M e d i c i n e S u b s p e c i a l t y	30	857	23	920
	8	228	6	240
	22	629	17	680
	4	114	0	0
	10	286	5	200
	5	143	7	280
	1	29	5	200
	2	57	0	0
G r a d t t a l	35	100	25	100

Primary thoracoplasty still finds a limited place in the treatment of patients with far advanced cavitary disease but in the main has largely been replaced by resection of the diseased lung tissue. The increase in resectional surgery and the abandonment of temporary collapse procedures is well depicted (fig 1)

Table 6 illustrates the different operations performed on patients discharged in 1953

Success of Therapy (table 7) By successful therapy we mean treatment of patients to the inactive stage (NTA Standards), that is sputum negative, cavities closed, and unchanging roentgenograms for at least six months. These patients should have the best chance of staying well without relapse. Patients discharged as "good chronics" (i.e., with open cavities and/or positive sputum, but roentgenogram stability) were classified as unsuccessful results as were deaths. It was doubtful that deaths from nontuberculous conditions should be so classified, however, all deaths have been analyzed separately (table 8). We believed that irregular discharges should be considered as treatment failures because the relapse rate in these patients presumably will be high. Only those military patients who would probably reach the inactive stage were kept at this hospital. The results in this group as expected, were excellent and not evaluated here. One hundred and five military patients were returned to active duty in 1953.

Results obtained in the veteran group of patients (a difficult problem from the viewpoint of extent of disease and of patient co-operation) and in the civilian dependent group are compared in table 7. The number of patients discharged as inactive in the veteran group is appallingly low as compared with the civilian dependent group. In both groups the irregular discharges represented a major problem, of 204 "treatment failures," 153 were due to irregular discharges. Of the veteran group one half left the hospital against medical advice as compared with one fifth of the civilian dependents. A hopeful sign in the veteran group is that the results in 1953 were better than those in 1952.

Deaths (table 8) Two operative deaths occurred in 1953, giving a surgical mortality of one percent for 212 procedures. One of the two, a patient whose pulmonary function was borderline for the operation, died of pulmonary insufficiency and the other patient died of repeated massive hemorrhage following segmental resection. The source of bleeding was unexplained at necropsy. A lobectomy was unsuccessful in stopping the hemorrhage.

Of the nonsurgical deaths, eight were due to causes other than tuberculosis. It is noteworthy that in 1953 there were no deaths from tuberculous meningitis. There was a decrease in

deaths from progressive or pneumonic tuberculosis. Some patients at death had only recently started treatment or had drug resistant organisms. Twelve of the 17 died due to pulmonary insufficiency and cor pulmonale or massive hemorrhage. They represented for the most part the end stages of tuberculosis with cavitory and fibrotic disease but with very little disease activity. In these patients the complications of tuberculosis rather than progressive disease was the main cause of death.

DISCUSSION

As shown by the data presented the basis of the present day therapy for tuberculosis consists of rest, chemotherapy and excisional surgery. At present strict bed rest is usually maintained (from two to three months) until the acute exudative phase has cleared and symptoms have largely disappeared. Modified bed rest is then continued until an inactive state is reached.

At present chemotherapy (streptomycin, isoniazid, streptomycin, para-aminosalicylic acid, isoniazid, para-aminosalicylic acid) is begun as soon as diagnostic studies are completed and is given throughout the entire hospitalization for a total of at least 12 months. The average duration of chemotherapy is now nearer 18 months for all patients. Many patients with far advanced disease and all good chronics are continued indefinitely on drugs.

Resection is considered after adequate drug therapy (usually from six to eight months) on the basis of the following indications: persistent cavitory disease, continued positive sputum and significant caseous residuals. During chemotherapy, concentrated sputum smears in addition to cultures are necessary to detect positive bacteriology because of the inhibitory effects of the drugs used on culture growth. All indications are of course relative and depend on the disease picture as a whole.

We believe that the immediate overall results of therapy are very encouraging with the present method of management. Because most patients are on drug therapy until discharge, however, relapse is not to be anticipated until a considerable time after discharge.

It is gratifying to note the excellent results obtained in treatment of the military personnel and their dependents. This probably reflects the co-operation obtainable from these two groups in the first instance by military discipline and in the second as a result of their understanding of tuberculosis problems. The consistently poor results obtained in unco-operative patients in all groups appears to us to be an added argument for more stringent compulsory confinement laws with adequate enforcement as one of the keystones of tuberculosis control.

Irregular discharges have decreased during the past year. This probably represents patient recognition of the advantages of medical treatment and the dangers of not accepting or discontinuing treatment. To patients as well as physicians, improvement is much more dramatic with chemotherapy and bed rest than with bed rest alone. The veteran patients continue to be a serious problem.

Disposition of Military Patients Because of the chronic relapsing nature of tuberculosis, the Army has in the past been reluctant to retain patients with tuberculosis for treatment, but has preferred to transfer such patients to the Veterans Administration. The major factors for this decision was the prolonged loss of service time, the high cost of hospitalization, the tendency to relapse in spite of therapy, and the necessity for reduced physical activity long after hospitalization. For this reason only a few career personnel with critical military occupational specialties were treated in the past and all others were retired from service.

Present-day changes in treatment have now modified some of the former objections to treatment in military service. Hospitalization has been shortened and in the future may be further shortened with chemotherapy continued on an outpatient program. Relapses are now much lower in number, and more arduous physical exercise can be begun earlier than previously. Although the cost of treatment is still high, it must be balanced against the same relative cost in Veterans Administration hospitals. One major advantage of treatment in military service is the fact that disciplinary power is available when necessary to ensure completion of such treatment. Outside of the armed services the results of this lack are demonstrated by the high irregular discharge rate of those patients retired to the Veterans Administration. The patients who leave the hospital with active disease are financial liabilities to the country as a whole. The added cost of future rehospitalization and pensions for these persons will be very high.

The present policy is to temporarily retire all noncareer, short-term (two-year draftee) and nonessential military personnel to the Veterans Administration as soon as a definite diagnosis of tuberculosis is established. Career personnel with disease so severe that a return to duty is not to be expected within 18 months are similarly retired. Patients who had disease present before entry into service which was not aggravated by service are separated from the service with the disease recorded as "line of duty no." The great majority of retirements are on a temporary basis and such persons are reevaluated for active duty in from 12 to 18 months following discharge. If the disease remains in

active a return to duty is then recommended Repeated evaluations are performed Permanent retirement is granted only to hopelessly diseased persons with little chance for recovery

SUMMARY

An analysis of the patients discharged from the tuberculosis service of this hospital in 1953 indicates that due to advances in therapy career members of the armed services who have active pulmonary tuberculosis have better chances than ever for return to full military duty One hundred and five such patients were returned to duty in 1953

Two hundred and seven of 1358 patients (15.2 percent) admitted for possible tuberculosis were found not to have tuberculosis Seventy-two patients (5.3 percent) were considered to have inactive tuberculosis on admission Of 1079 patients with active tuberculosis 87.7 percent had pulmonary involvement nine percent had pleural effusion only and 3.3 percent had extrathoracic disease Of the patients with active pulmonary tuberculosis 20.3 percent had minimal disease 49.5 percent had moderately advanced disease and 30.2 percent had far advanced disease

Present therapeutic trends include drugs given over a longer period of time increased use of pulmonary resection limited use of thoracoplasty and virtual abandonment of temporary collapse procedures Irregular discharges of uncooperative patients represent one of the most serious unsolved problems of tuberculosis This is especially true of the veteran population Excellent immediate therapeutic results have been obtained in both military patients and their dependents

Administrative problems associated with military patients are complex in nature and the rationale for handling these patients is based on the extent of the disease and whether or not the patient is a career soldier

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CHYLOTHORAX DUE TO SPONTANEOUS RUPTURE OF THE THORACIC DUCT

MARION L. CONNERLEY *Commander (MC) USN*

GEORGE G. ZORN *Lieutenant (MC) USN*

CHYLOTHORAX, first described by Longolot¹ in 1663, is a comparatively uncommon condition. About 150 cases have been reported in the literature.²⁻⁷ Of even greater rarity is the true spontaneous rupture of the thoracic duct.

TRAUMATIC CHYLOTHORAX

As the name implies, traumatic chylothorax is produced by injuries such as blows on the chest, penetrating wounds, crushing injuries, and hyperextension of the spine. It has been known to occur in the newborn infant when attempts at resuscitation have been too vigorous,⁴ or from hyperextension during delivery.⁵ Included in this group also are chylothoraxes due to injuries to the thoracic duct during surgery. Smithwick⁶ remarked that he had injured the thoracic duct 15 or 20 times during sympathectomies for hypertension. The thoracic duct is injured quite frequently during excision of lymph nodes and other masses from the left side of the neck.

Many of the chest injuries which could produce a chylothorax result in the death of the patient before the condition can become manifest. This of course is because of the close proximity of the duct to vital structures; however, chylothorax can also occur after relatively trivial trauma. Meade and associates⁷ called attention to the elasticity and free mobility of the normal thoracic duct. They believed that in most of these injuries the duct must first be bound down or invaded by some disease process before hyperextension or other slight trauma can produce a chylothorax.

Cases of traumatic chylothorax have been summarized by Meade and associates,⁷ Shackelford and Fisher,⁸ Lampson,⁹ and Baldrige and Lewis.¹⁰

ATRAUMATIC CHYLOTHORAX

Atraumatic chylothorax is usually due to malignant neoplasms, tuberculosis, filariasis, or thrombosis secondarily affecting the

From U S N I Hospital, San Diego, Calif. Dr. Connerley is now at 3762 LaCresta Drive, San Diego, Calif.

thoracic duct Yater² in 1935 found less than 100 cases in the world literature of which 31 were due to neoplasms such as carcinoma lymphosarcoma, and Hodgkin's disease Ten cases were due to tuberculosis and 13 had other causes (thrombosis of the upper great veins polyserositis atherosclerosis of the thoracic duct filariasis perforating lymphangitis, and diaphragmatic hernia)

In discussing atraumatic chylothorax it is interesting to note that the obstruction of the duct alone is not enough to produce a chylous effusion Lee¹ in 1922 ligated the thoracic duct in cats and showed that chylothorax did not develop In time collateral lymph channels were formed in these animals Blalock and associates² on the other hand succeeded in producing a chylous effusion in cats and dogs by ligation of the superior vena cava One half of his animals developed a chylothorax and some developed a chylopericardium

That a tumor mass or inflammatory process does not cause a rupture of the thoracic duct by occlusion alone is substantiated by Yater² and Washburn The former author reported 24 cases of duct obstruction in which only three exhibited a chylous effusion Washburn had 12 such cases, in which only one developed a chylothorax Instead the disease process most likely causes a necrosis or suppuration of the duct wall through which perforation can occur Because the duct is retropleural chyle is "bottled up" and ruptures into the pleural cavity some time later Thus especially in atraumatic chylothorax there is usually a latent period before chyle appears in the pleural cavity

HISTORY OF TREATMENT

Not many years ago all patients with chylothorax were treated conservatively with symptomatic and supportive measures Because most of these patients died from protein and fat depletion an attempt was made to infuse aspirated chyle This was first attempted by Oeken in 1908 with a fatal result however Bauersfeld in 1937 successfully returned chyle to a patient intravenously Little and associates reported a case in which over a six month period 22 485 cc of chyle was infused to a patient without mishap But in 1949 a patient treated by Whitcomb and Scoville died unexpectedly during a chylous infusion

Several theories have been advanced for the cause of death during this procedure These last authors believed their patient died in anaphylactic shock It would seem unusual that anyone could exhibit an anaphylactic response to his own secretions Perhaps foreign protein is responsible for the sensitization Still again the size of the fat globules may play a part by forming a fat embolism

In 1903, Dennessly¹ advocated implantation of the severed thoracic duct into a nearby large vein, and succeeded in placing the proximal end of the injured duct into the internal jugular vein in the neck. In 1916, Harrison² implanted the cut end of the duct into the external jugular vein.

Prior to 1946, when the first successful ligation of the thoracic duct in the chest was done by Lampson, chylothorax resulted in a mortality rate of over 50 percent. In fact, Cushing³ remarked that the thoracic duct lay in a surgically forbidden territory. In 1934, later said, "Ligation in the chest is almost certainly fatal." As late as 1945 Florer and Ochsner⁴ wrote, "Direct surgery to repair the duct has been completely unsuccessful, resulting in 100 percent operative mortality." In 1948 Hodge and Bridges⁵ advised the implantation of the duct into the azigos vein for fear simple ligation might produce increased intraductal pressure and rupture. In the past few years, however, ligation of the injured thoracic duct has been performed many times without complication.

Other therapeutic measures have been attempted in this condition but need only be mentioned here. These include pneumothorax, phrenic crush, and instillations of broths or chloroazodin (azochloramid).⁶ These procedures supposedly close the leaking duct by pressure.

The management of chylothorax was excellently described by Meade and associates.⁷ Protein loss should be replaced by a high protein diet and by intravenous infusions of amino acids, serum albumin, and whole blood. Because of the danger of hepatitis, plasma is usually avoided as a means of protein replacement. Meade reported such a complication.

If repeated aspirations of the chyle are performed, about 50 percent of the patients will recover on that regimen alone. Should the amount of chyle fail to decrease, then closed drainage, with or without suction, may be instituted. If the patient still does not respond favorably, a thoracotomy with ligation of the thoracic duct should be performed. It is unwise to use closed suction for more than two weeks, as the lung then becomes encapsulated, necessitating a decortication.

Danger of infection from repeated aspirations is minimal. Chyle in itself is bacteriostatic, and has never been known to become infected.

CASE REPORT

A 17-year old youth was admitted to this hospital on 29 August 1951 with a diagnosis of pulmonary edema, cause unknown.

His chief complaints were swelling of both ankles and of the face shortness of breath and mild cough. He stated that he had been well until one month prior to admission when he noticed gradual and progressive swelling of his ankles. Two weeks later his face became edematous. About this same time shortness of breath particularly on exertion and a mild nonproductive cough became manifest. All had become more severe. On the day of admission he noticed scrotal edema for the first time.

His past history revealed that he had been a student, had worked in a grocery store and then had entered the Navy in February 1951. He had not been out of the continental United States. He smoked less than a package of cigarettes per day and rarely drank. His family history was negative for tuberculosis, diabetes, cardiovascular disease and carcinoma. He had the usual childhood diseases including whooping cough. There had been no significant adult illnesses and his only surgical operation was a tonsillectomy. His only injury was a simple fracture of a metacarpal several years earlier. No history of recent trauma could be obtained. He denied venereal infection.

Systemic review revealed that he had gained 10 to 15 pounds in the month preceding admission to this hospital. For two weeks prior to admission he had noticed increased urinary frequency (five times a day) and nocturia (one to three times a night).

Physical examination showed a well developed and well nourished young man in no apparent distress. His height was 5 feet 7 inches and weight was 155 pounds. His usual weight had been 140 pounds. Temperature was 99° F, pulse 80, respirations 22 and blood pressure 118/84. There was mild periorbital edema; otherwise the eyes, ears, nose, throat and neck were negative. Inspection of the thorax revealed a lag of the left chest on deep inspiration. There was absent tactile fremitus, flatness to percussion and absent breath sounds below the second interspace of the left chest. The heart and mediastinum were shifted slightly to the right and heart sounds were distant. The abdomen was somewhat rounded and soft. The liver edge was palpable two fingerbreadths below the costal margin. It was smooth and nontender. The spleen and kidneys were not palpable. There were no abdominal masses, tenderness or rigidity. There was some dullness to percussion in the flanks with suggestive shifting dullness. Bowel sounds were normal. The genitalia were normal except for slight scrotal edema. Two plus pitting edema of the ankles was present. Neurologic and rectal examinations were negative. The clinical impression was anasarca and pleural effusion due probably to nephritis.

Laboratory studies were as follows. Repeat urinalyses were within normal limits. Specific gravities varied from 1.018 to

1 024 Sugar and albumin were negative. Microscopies revealed a few amorphous phosphates but were negative for red and white blood cells and for casts. The Kahn test was negative. The red blood cell count was 4,900,000, hemoglobin, 14 grams per 100 cc, white blood cell count, 7,800 with 88 segmented neutrophils, 10 lymphocytes, and 2 monocytes. Hematocrit was 44. Sedimentation rates varied from 7 to 23 mm/hr. On the day after admission the total protein was 3.6 grams per 100 cc. Without receiving parenteral proteins, and while on a simple low salt diet, the protein was reported on 10 September 1951 to be 5.72 grams (albumin, 4 grams, globulin, 1.7 grams). Chloride (as sodium chloride) was 460 mg, nonprotein nitrogen, 36 mg, and creatinine, 3.2 mg per 100 cc. The phenolsulfonphthalein test and electrocardiographic findings were normal.

Roentgenograms of the chest revealed a pleural effusion on the left to the level of the second rib anteriorly.

When laboratory studies failed to substantiate the diagnosis of nephritis, tuberculosis was considered as the possible cause. Skin tests were done with these results: histoplasmin and cocci dioidin were negative in dilutions up to 1:100, old tuberculin gave a hypersensitive reaction at 1:100, but was negative in greater dilutions.

On 18 September 1951, a left thoracentesis was performed, and 1,600 cc of white chyle was aspirated. On 25 September a second thoracentesis yielded 500 cc more. Treatment at this time was purely symptomatic. During the following week repeat roentgenograms (fig. 1) and blood chemistry studies were done. Respiratory function tests revealed that the vital capacity was 2,065 cc and the air velocity index was 0.88.

The fluid in the left chest rapidly reformed, necessitating repeat thoracenteses with removal of 2,700 cc and 2,750 cc of chyle on respective occasions. The patient was given two units of serum albumin following each of these taps. On 9 October 1951 his total protein was 6.18 (albumin, 4.8 grams, globulin, 1.3 grams).

On 11 October a left thoracotomy was performed. After opening the pleural cavity an estimated 4,000 cc of chyle was removed by suction from the left hemithorax. The lung was covered with a filmy fibrinous peel which was wiped away. The mediastinum was opened and the esophagus was mobilized. The thoracic duct was identified lying between the aorta and azygos vein. A transverse tear in the lower third of the duct completely divided it, but there was no evidence whatsoever of neoplastic or inflammatory disease to explain the chylous effusion. A portion of the duct was excised and forwarded to the laboratory, where



Fig 1 R ntg g m f be t bow g th l ft chyl thora 10 d y befor g al t ru nt n.

microscopic examination revealed a normal thoracic duct. The distal end of the duct was dissected free and ligated. Several proximal branches were isolated. These too were leaking chyle and were ligated. The mediastinum was closed loosely, a No 24 Foley catheter was inserted into the left chest and connected to underwater suction, and the chest was closed.

The postoperative course was entirely uneventful. The thoracotomy tube was removed on the third day. Roentgenograms showed complete re-expansion of the left lung. There was no evidence of fluid and only minimal postoperative pleuritis. The mediastinum was in the midline. The diaphragm was normal in position and the cardiac shadow was normal.

The patient's convalescence was so remarkable that he went home on convalescent leave 13 days after operation. At the ex-

piration of a 30-day period he was again examined and evaluated. He stated that he was completely asymptomatic while at home, and that he did not find it necessary to restrict his physical activities. A roentgenogram (fig 2), blood studies, and respiratory function tests were all within normal limits. Physical examination was negative. He was returned to full duty on 7 December 1951.

In February 1952 the patient was readmitted to the hospital because of ankle edema and dyspnea on exertion. Physical examination was negative except for slight ankle edema. Roentgenograms of the chest and respiratory function tests were normal. Laboratory studies, including a complete blood cell count, urinalysis, Kahn, nonprotein nitrogen, total protein, albumin globulin ratio and renal function tests, were all within normal

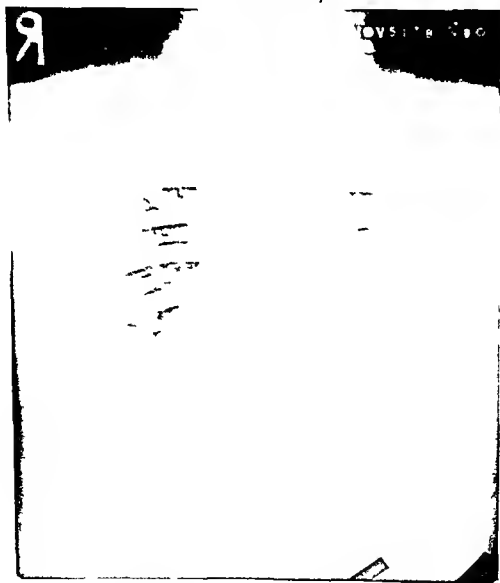


Figure 2 Roentgenogram seven weeks after operation showing a relatively normal postoperative condition of the chest

limits Within five days the patient became completely asymptomatic on bed rest and symptomatic treatment His ankle edema did not recur even after trials of prolonged standing He remained symptom free and was discharged on his thirty ninth hospital day

The patient's condition is still being followed He has been performing his duties at sea without difficulty Periodic roentgenograms of the chest have been negative and he believes that his physical endurance is above average

SUMMARY

A patient with spontaneous rupture of the thoracic duct was treated successfully by ligation of the duct We were unable to find an explanation for the ruptured thoracic duct in this patient In a recent article Meade presented five cases of spontaneous chylothorax however he was able to show that four of his patients had recent hyperextension injuries of the back and in each of the five cases presented there was evidence that the duct could have become fixed as a result of congenital anomaly trauma or infection Careful interrogation and examination of our patient revealed nothing to suggest a fixed duct and at operation it was not found to be adherent to neighboring structures

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THE PHYSICAL EXAMINATION (1863-1954)

The duties which devolve upon the examining surgeon are both delicate in their nature and of difficult performance. Intrusted with the responsibility of deciding some of the most perplexing questions in medical science upon only a few moments reflection he cannot approach the discharge of his office without feeling how essentially important to the right understanding of every case are the smallest apparent details of which it is made up. The causes of disease, the catenation of symptoms, their usual and ordinary progress, the results now present and visible, now unseen and latent, which they have produced in the human system—age, temperament and occupation—all these are data which must be weighed and considered in every instance before he can correctly form an opinion. When, in addition to the incertitude of natural phenomena, the accidents of fraud by simulation or concealment enter into the problem, it is not difficult to see that with all the skill possible, and all the readiness of observation employed, cases of deception will at times escape detection.

—JOHN ORDRONAU, M.D. *Manual of Instructions for Military Surgeons*. D. Van Nostrand, New York, N.Y. 1863, p. 19.

TABLE 2. *Age, Sex, Race, and Date of Death*

Age	Sex	Race	Date of Death	Group	Number	Age (yr)
N	Female ²²	T	Ca d	h p l d h l d	300	60.0
S d f f	d E h d ²²	S	J C R	h p l d h l d	56	52.0
B d y ²		P	R	h p l d h l d	92	4.3
				h l d		
				g l		
				boy	50	30.0
					52	12.0
Cr ²⁵		S	P ul B d	h l d	309	60.0
M	d Q	M	C y M	boy	1551	48.0
M l l	d E h	A	P ma	h l d	100	95.0
				h l d	100	53.0
Y ²⁵		L	do E g l n d	h p l d h l d	119	52.0
S h f f ²⁶		Ams	d m N h l d	h l d		100.0
J	d R h n a l ³⁰	B h m r		h l d	2500	80.0
V p l n k		R		h l d	6552	17.0
S l l d h		Guam		d o l	637	1.0
Ch	d l a	M l	F h l p p l l d	h l h l d d d o l	490	75.2

most of the patients. Because the swabs were taken throughout the day, many of the children were examined during the afternoon and many of them had been bathed before the examination.

TABLE 3 *Incidence of Enterobius vermicularis infection at Westover Air Force Base, Mass.*

Age group (years)	Number of patients examined	Number of positive stools	Incidence (percent)
Under 1	11	1	9.1
1 to 2	43	8	18.6
2 to 3	79	16	20.2
3 to 4	54	14	25.9
4 to 5	54	21	38.8
5 to 6	73	26	35.6
6 to 7	63	20	30.7
7 to 8	55	30	54.5
8 to 9	26	10	38.4
9 to 10	22	6	27.2
10 to 11	18	3	16.6
11 to 12	7	4	57.1
Total	505	159	31.6

RESULTS

In our study of 505 children of both sexes between the ages of six months to 12 years, we found that 31.6 percent had enterobiasis (table 3). Because the incidence of pinworm infestation is relatively rare under the age of one year, we did not examine this age group unless an older sibling was found to be affected. The oldest age group examined was the group of eleven year olds. Although an incidence of 57.1 percent (four of seven children) was found among these patients, we believe that no conclusions can be drawn because of the small number of patients in this group. The years of most frequent occurrence were between four and eight. In this series the peak was in the seven year old age group with 54.5 percent of these children having enterobiasis. It must be stressed that because we used only a single perianal swab for diagnosis of each one of most of our patients, and because many of the swabs were taken in the afternoon after the children had been bathed, the total which we recorded was probably lower and may not have necessarily indicated the actual incidence of *E. vermicularis* infestations. Sawitz and his co-

workers found that the first examination revealed only 70 percent of the cases in their series

DISCUSSION

Enterobiasis is a cosmopolitan disease thriving on host populations the world over. It is not confined to the poorer economic groups alone; it is found in all levels of society and no group has been found to be completely exempt from pinworm infestation.

The only way in which enterobiasis can be adequately diagnosed is by the microscopic examination of a perianal swab for ova. Clinical diagnosis is inaccurate because only 25 percent of the patients have any symptoms. The ideal time to make an examination is in the morning shortly after the patient awakens. At this time the eggs are more apt to be present in the perianal area and will not be lost as a result of bathing, defecation or scratching.

The female pinworm discharges from 10,000 to 25,000 eggs on the skin near the anus. Each one of the eggs is capable of surviving for a long period under favorable conditions of sufficient moisture and coolness. Eggs though quite resistant will succumb to dryness and elevated temperatures.

Enterobiasis should be considered a family disease. Nolan and Reardon studied dust samples from homes of patients with heavy pinworm infestations and found the ova in 91.7 percent of the dust specimens collected. If one member of a family becomes infested the disease may spread to other members. Living in congested, crowded quarters with limited plumbing facilities further increases the likelihood of transmission.

It is important for all physicians in the armed services to be aware of the pinworm problem. Frequent perianal smears should be performed on all persons living on military installations in order to diagnose and treat all cases of enterobiasis. It is important to instruct the patient as to the nature of the pinworm and the hygienic measures for preventing its recurrence. Active programs for diagnosis should be carried out by medical officers on a world wide scale. In particular personnel who are leaving areas with a high infestation rate should be checked to ensure that they are not transporting the pinworm to a new area. The rate of enterobiasis can be lowered considerably under such a program.

SUMMARY

Enterobiasis is prevalent throughout the world. At this hospital examination of 505 children between the ages of one to 12

years by means of cellulose tape swabs revealed that 31.6 per cent of the children had enterobiasis. All medical officers should be aware of the pinworm problem, and efforts should be made to diagnose the infestation so that treatment and prevention can be carried out.

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THE PRINTED WORD

Modern medicine or at least modern physiology may be said to have started with William Harvey Quickly there followed Boyle the chemist Boerhaave the great bedside teacher the one fixated to bring patient and theory together and his Swiss pupil Albrecht von Halle who wrote *Elements of the Physiology of the Human Body* (1759 1766) until now. But now we are in the stream of books medical books books on history books of literary value some of which we like to read Undoubtedly many manuscripts and learned treatises dropped to the bottom of the stream some to be hooked by patient fishermen in years to come but most to be buried in what is known to geologists as primeval sludge And most were perhaps no better than the sludge itself Fortunately today there is still sludge and not every book published can escape it Many books and articles written should never have left the quivering pen of inadequately prepared authors whose knowledge has been meagre but whose enthusiasm has been boundless Indiscriminate writing is surely worse than no writing at all

—WALTER W. BOYD M D

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CEREBRAL ATROPHY DUE TO ALCOHOLISM IN YOUNG ADULTS

BERNARD TUMARKIN *Lieutenant (MC) USNR*
JAY D WILSON *Lieutenant Commander (MC) USN*
GILBERT SNYDER *B S*

IN EVALUATION of military patients with more than one enlistment who gave a history of intermittent or periodic heavy drinking and the gradual accumulation of a record of increasingly serious disciplinary offenses, we became interested in studying the problem of chronic alcoholism and brain damage from the standpoint of a team approach. This article presents findings in seven patients elicited by neurologic, psychiatric, and psychologic techniques.

The literature reveals many studies concerned with the pathologic and physiologic effects of alcohol on the central nervous system. In studies on autopsy material, Moore,¹ Umiker,² and Alexander³ found edema, hyperemia, and petechial hemorrhages in patients dying of acute alcoholism. Writing on the findings in chronic alcoholism, Alexander, Liechtenstein, Boyd,⁴ and Stevenson⁵ described the presence of diffuse, generalized cortical atrophy in the gross specimens. Microscopic findings are present in the cortical or striatal areas of the brain in some cases, and in others the cerebellum, medulla, and midbrain may be involved.⁶⁻⁸ The main features are atrophy and loss of cells, perivascular edema, increase in astrocytes, swelling and fragmentation of myelin, and vascular changes including petechial hemorrhages.

From a roentgenographic point of view, it is a well accepted fact that atrophy of the brain when present beyond a certain degree is demonstrable by pneumoencephalography.¹⁰⁻¹² There is a wide range in the individual variations in the normal, making evaluation in marginal cases difficult and necessitating a well trained and experienced roentgenologist.

In a study relating pneumoencephalographic and electroencephalographic findings, Levia and Greenblatt¹³ found that 36 of 67 patients with cortical atrophy and/or ventricular dilatation showed abnormal wave patterns. Twenty one of the 36 were without a history of convulsions, and of these 17 showed slow wave

abnormalities Hines and associates reported abnormal electroencephalograms in four patients with cortical atrophy and in three of nine patients with chronic alcoholism Rubin demonstrated abnormal electroencephalograms in nine patients with schizophrenia in whom cerebral atrophy was found In two of the nine delta wave activity was reported

Goodman and Gilman stated that alcohol causes an irregularly descending depression of the central nervous system Depression of respiration does not occur until late in the course of marked alcoholic intoxication In a study of 34 patients with alcoholic hallucinosis Greenblatt and co-workers¹⁷ demonstrated that during the active phase of the disease six of 13 patients showed abnormal tracings whereas following recovery only one of 21 asymptomatic patients showed abnormal findings Davis and associates¹⁸ in studies of the effects of alcohol upon the electroencephalogram found that relatively low blood alcohol concentrations resulted in a reduction in energy on the fast side of the frequency spectrum particularly in the range of 10 to 13 cycles per second At higher concentrations they found episodes of waves of four to eight cycles per second with an increase in energy in that band of frequencies Engol and others demonstrated the same effects with alcohol as well as with barbiturates anoxia and hypoglycemia Wyke and Brazier and Finosinger² demonstrated in the electroencephalogram a regional differentiation of response to barbiturate sedation both as to onset in time and degree of change In patients receiving larger doses per kilogram of body weight slow wave activity of three to four cycles per second replaced the original response of slowing of alpha or of the high voltage 20 to 30 cycles per second activity

Schwab pointed out that short bursts of delta wave activity may be associated with a slowing of mental processes so slight that experimental methods are necessary to discover it Hoch and Kubis found that in organic psychoses mental impairment was usually demonstrable when delta waves were present

The reports of psychologic studies of chronic alcoholics indicate that the prolonged habitual use of intoxicating beverages results in impairment of intellectual functioning Wechsler¹ found that the digit-span and digit-symbol subtests indicated major impairment Impaired intellectual functioning was found before there was any clinical evidence of brain pathology A positive relationship between the intensity of the impairment and chronicity of the alcoholism was indicated Klehanoff and others⁴ in a recent survey of the literature pertaining to the psychologic consequences of brain lesions and ablations state that results of certain Wechsler Bellevue subtests appear to be particularly affected by brain injury The digit-symbol and digit-

span subtests are among these. Morrow and Merk^{27, 28} in their studies on organic brain pathology also found impairment could be revealed by the digit-span and digit-symbol subtests.

THE STUDY AND ITS FINDINGS

This study deals with seven enlisted men on active duty, each of whom during their military careers reached one of the top three enlisted pay grades. They ranged from 25 to 38 years of age, with a mean age of 32 years and had been using alcoholic beverages for from seven to 17 years, with a mean of 11 years. Each man indicated a relatively recent intolerance to intoxicating beverages. With the exception of one patient who was admitted with questionable epilepsy, each was admitted to this hospital because of his inability to perform adequately the duties of his rate. All were admitted to the neuropsychiatric service and subjected to physical, psychiatric, neurologic, and psychological examinations.

The physical examinations of all patients were within normal limits. Six had normal neurologic findings, the seventh showed slight ataxia as determined by gait, finger-to-finger, and finger-to-nose testing. Psychiatric examination revealed the patients to be oriented as to time, place, and person. There was no evidence of hallucinations or delusions. Sensorium was not grossly disturbed, however, each experienced some difficulty in recalling such things as mnemonic data and test material. There was no evidence of thinking disturbances. As a group, they were slightly dull with apathetic effect, and showed a slight depression of mood in terms of concern over the cause of their difficulties.

The electroencephalographic patterns of all patients were abnormal. Six records revealed symmetrical slow waves, three to four per second located in the frontal areas. In addition, three of these revealed the same type of waves in the parieto-occipital areas. The seventh record was considered borderline, consisting of low voltage alpha waves with occasional bursts of slow waves in the frontal regions.

Pneumoencephalographic findings in six of the seven revealed moderate, diffuse, bilateral cortical atrophy in the parietal region. The atrophy in one of the patients is illustrated in figure 1. Frontal atrophy was found in four of these six patients. The seventh showed mild diffuse generalized atrophy. Three of the seven revealed ventricular enlargement as well. In all cases, the parietal involvement was most marked.

The psychological study used seven, rather than 11, subtests of the Wechsler Bellevue Intelligence Scale, Form I. Selection was determined in reference to Wechsler's earlier study²⁴ and was



Fig 1. P. moe ph. l. gam. ght l. l. ter l. w. l. g. m. der-
t. d. j. s. t. al at opby in th p. t. l. g. (A) P. t. ent. th
ho. ontal p. t. on (B) in the est. al po. t. on.

designed to decrease fatigue during testing. The results (table 1) yielded the following mean subtest scores for seven subjects: Information, 10.4, comprehension, 11.1, digit span, 7.4, similarities, 9.6, vocabulary, 11.4, block design, 9.3, and digit symbol, 7.7. The mean of these scores is 9.6 and one standard deviation is equal to 1.4. The subtest scores that differed significantly from the mean and hence revealed a relative degree of impairment were digit span (7.4) and digit symbol (7.7). According to Wechsler²⁹ the former is related to a disturbance of memory span and may be associated with attention defects and lack of ability in maintaining concentrated effort. The latter score may be the result of decreased motor coordination or difficulty in concentration. To state the exact nature of the apparent psychologic deficiency is beyond the scope of this small study. Six of the records were consistent and revealed the above deficiencies. The seventh indicated no impairment on psychologic examination. The electroencephalogram of this patient was noted above as being borderline.

DISCUSSION

A review of the histories of the seven patients failed to reveal any evidence of congenital abnormality, significant trauma, infection such as encephalitis, or exposure to toxic agents such as carbon monoxide. The age group ruled out such conditions as Alzheimer's sclerosis or senile changes. There was no evidence of arteriosclerosis and no clinical signs of Pick's disease, the ages of the patients tended to rule out such conditions anyway. The only common denominator in these cases was the history of excessive intake of intoxicating beverages over a period of many years.

Vogt and Vogt³ brought out the theory of pathoclasia based on the concept of so-called topistic units. They believed that topistic units may be said to be structurally, functionally and developmentally characteristic parts of the brain as for example the various nuclei, layers or areas of the cerebral cortex. Diseases confined in their distribution to such units are termed topistic, and the tendency of the topistic units to be affected selectively is referred to as pathoclasia. The central idea in the theory is that the smaller or greater structural differences which are to be found within the central nervous system are determined by and reflect functional differences. Differences in cellular function are considered to be responsible for differences in the cells' susceptibility to various noxious agents, many of which are unknown.

The available evidence supports the inference that during acute alcoholic intoxication there is edema which leads to hypoxia, also, intoxication produces direct toxic changes in the

TABLE I. *Wght d b t s t h n b l B l l v u e t e l l g n e s c a l e f o r m 3 s v p i t*

C	A g	S b						
		I f m	C m p h	D s	S m a l	V b u l y	B l k	D s y m b l
1	30	11	12	6	11	12	12	10
2	30	8	10	6	8	8	8	6
3	25	14	12	10	10	13	7	8
4	32	7	5	4	5	7	7	4
5	35	13	12	7	11	14	11	6
6	37	10	16	13	11	12	12	11
7	38	10	11	6	11	14	8	9
Σ	324	104	111	74	96	114	93	77

cells of the cortex with interference in the respiratory and metabolic processes. These changes are largely reversible, but some damage is permanent and leads to a loss of cells and nerve fibers, primarily in parietal and frontal regions. In our patients (who are all military personnel) the episodes of intoxication must have occurred periodically. Because all of the men had been on active duty for many years, adequate performance of their duty necessarily involved abstinence from alcoholic beverages for prolonged periods of time. The effects of the periodic acute alcoholic intoxications led to gradual loss of cells with each intoxication. A point was finally reached at which such a cumulative loss of cells resulted in certain findings. Clinically these patients began to show intolerance to alcohol (subjective feelings of intoxication being elicited by increasingly smaller amounts) and their consequent displays of disturbed judgment involved them in administrative difficulties. Tests such as the electroencephalogram and psychometrics revealed abnormal patterns, and the pneumoencephalogram revealed evidence of atrophy.

It is generally accepted that chronic alcoholics as a group are difficult to handle under any regimen of psychotherapy. We believe that atrophy such as we have demonstrated may be a relevant factor.

SUMMARY

Seven enlisted men with an average age of 32 years and a history of excessive intake of alcoholic beverages over a mean period of 11 years showed no gross pathologic findings on clinical neurologic or psychiatric examination. Nevertheless, the digit-span and digit-symbol subtests of the Wechsler Bellavue intelligence scale revealed significant impairment. Electroencephalograms disclosed abnormal findings consisting of bilateral, high amplitude, slow waves (three to four per second) in the frontal regions and in some of the parieto-occipital areas as well. Diffuse cortical and subcortical atrophy, particularly in the parietal region, was found on pneumoencephalography.

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HEARING AND INDUSTRIAL NOISE

SAM C BOSTIC *Captain (MC) USN*

HERBERT J WORSHAM

INDUSTRY throughout the nation is rapidly recognizing noise as a major health problem. Increased emphasis is being placed on the protection of exposed workers and on the control of this hazard. In spite of extensive noise abatement programs, many industries are still faced with compensation claims. The Navy probably has more than its share of excessive noise level areas in connection with its activities.

Early in 1952 a program was inaugurated at this air station designed to conserve the hearing of personnel and to protect the Government from false claims. From its inception this program has consisted of three major phases, each of which will be discussed briefly.

SCIENTIFIC EVALUATION OF THE HAZARD

At the beginning of the program, over-all noise-level intensities were determined and, if sufficiently high to warrant octave band frequency analyses were made, the data being plotted on graphs in the usual manner. Based on data published in the literature,¹⁻⁷ danger levels in the different frequency bands had been arbitrarily established pending more definite agreement by authorities on the subject. It is generally accepted that the human ear is more susceptible to noises in a frequency band of 2,300-4,800 cycles per second. In this band we considered noises in excess of 85 decibels as being potentially dangerous. In a band of 20-75 cycles per second, the value increased to 105 decibels. It was evident that over all intensity levels alone were of little value in determining potentially dangerous areas.

Frequency data were used as a basis for making recommendations for the control of noise at its source when indicated, and when the operation producing the noise was of such nature that mechanical means can be applied. In some instances excellent attenuation was obtained by surrounding the noise producer with an enclosure constructed from sound-absorbing materials.

PERSONAL PROTECTIVE EQUIPMENT

Many noises cannot be controlled at their source and the control of many others is not feasible. Some of the more important

sources in this group are aircraft engines operating at high revolutions per minute on the field sandblasting steam cleaning metal spraying the beating of aircraft cylinders with large propane torches and the drying of parts with high pressure air streams. Therefore it became necessary to furnish protective equipment. Personnel exposed to excessive noise intensities reported to the dispensary for an examination of their ear canals. At the time of the visit they were fitted with ear defenders and all personnel except sand blasters who must wear abrasive masks were fitted with protective helmets. The helmet used was an obsolete nylon aviator's helmet equipped with a protective ear covering—a chamois earphone cushion shaped like a doughnut. The hole in the chamois was first covered with an additional piece of chamois after which a dense sponge rubber plug was fitted and glued into the opening in the molded semirigid rubber earphone retainer.

AUDIOMETRY

Suitable Testing Chamber At the beginning of the program audiograms were taken in the dispensary located in the industrial area. The noise level which varied almost constantly ranged from 55 to 65 decibels with low frequencies predominating. Most persons showed some hearing loss over the entire frequency. Loss in lower frequencies minimized the characteristic drop that occurs at 4 000 cycles per second when diminished hearing has been experienced as a result of extended exposure. It became evident immediately that a more suitable location would have to be found if reliable audiograms were to be obtained.

Persons thoroughly familiar with the station prepared a list of locations they considered quiet. One by one these locations were eliminated. Information that a walk in cold storage room installed in a brick building was available prompted its investigation as a possible location. The outer walls of the room were of wood and the inner walls of metal the total thickness being six inches. The nature of the insulation was not known. The inside dimensions were 11.5 feet by 6.5 feet by 7.5 feet. After a rubber mat was placed on the deck to eliminate noise made by contact with the metal it was found that the noise level ranged from 26 to 30 decibels. This intensity was not exceeded when many multengine aircraft were being turned up about one half mile away or when planes flew over at a low altitude. The predominant frequencies in the storage room were below 600 cycles per second.

Many authorities have concluded that audiograms taken in noisy environments are of little or no value in determining hearing losses. In some instances a level below 40 decibels has

been recommended, in others a level below 30 decibels ⁸⁻¹⁰ A comparison of audiograms (table 1) showing the apparent binaural hearing loss of a few of the persons tested in the two locations confirmed the conclusions reached by others. Binaural losses were calculated by the Fowler Sabine method¹¹ which uses only frequencies of from 512 to 4,096 cycles per second.

In the event a person showed a higher percentage loss on audiograms taken in the low intensity surroundings, it was considered that the progressive change had been more than was indicated by comparing the audiograms.

TABLE 1 *Decibel loss and percent of binaural loss at indicated frequencies*
(Sound pressure level in 1952 55 to 65 decibels in 1953 26 to 30 decibels)

Subject	Percent binaural loss		Decibel loss at 512 cps Average left and right		Decibel loss at 4,000 cps Average left and right	
	1952	1953	1952	1953	1952	1953
1	40	07	20	5	23	18
2	35	06	20	2	18	13
3	27	00	25	3	0	3
4	98	47	28	5	38	38
5	91	09	20	0	30	20
6	19	00	20	0	3	0
7	29	01	13	0	23	13
8	28	00	20	5	13	8

The loss of hearing caused by long exposure to excessive sound pressure levels is regarded as a slow progressive process. This activity was more interested in this progressive permanent hearing loss than in the temporary loss experienced for relatively short periods following exposure. If the progressive loss was to be evaluated with any degree of accuracy it was mandatory that suitable spaces for conducting audiometric tests be provided.

Table 2 shows the hearing characteristics, at the indicated frequencies and binaural hearing losses of employees subjected to three types of exposure. No attempt was made to classify the subjects according to age groups or lengths of exposure. The tabulated data was based on the last of a series of audiograms. It can be seen that for any frequency a higher decibel loss was suffered by sandblasters than by those working at other occupations. From such studies a more intelligent program of hearing conservation can be devised.

TABLE 2 N mb and p c t f empl ye s by p c t b b t g h i g l s s e p c f i d / r e q u e i s d p r c t b a l l s

Occup i l c w f l	Numb m l d	D i b e l l p e n t b l i	F r e q u e n c y l s p c o d												D i n a w l l o												
			128			256			512			1024				2048			4096			8192			12000		
			Numb b e	P c t	P c t	Numb b e	P c t	P c t	Numb b e	P c t	P c t	Numb b e	P c t	P c t		Numb b e	P c t	P c t	Numb b e	P c t	P c t	Numb b e	P c t	P c t	Numb b e	P c t	P c t
G n d n d p f l i g h t i f d a e j t d l p i s a l	234	0 10	89	38.0	194	82.9	190	81.2	194	82.9	165	20.5	101	43.2	114	48.7	86	36.8	221	94.4							
		11 20	119	50.9	34	14.5	37	15.8	33	14.1	48	20.5	52	22.2	46	19.7	59	25.2	10	4.3							
		21 30	21	9.0	5	2.1	6	2.6	4	1.7	12	5.1	28	12.0	29	12.4	32	13.7	1	0.4							
		31 40	5	2.1	0	0	0	0	2	0.9	5	2.1	26	11.1	15	6.4	24	10.3	0	0							
		41 50	0	0	1	0.4	1	0.4	0	0	3	1.3	23	9.8	24	10.3	22	9.4	1	0.4							
		51 m	0	0	0	0	0	0	1	0.4	1	0.4	4	1.7	6	2.6	11	4.7	1	0.4							
T r e l l w i m l d a e j t d p i s s l	33	0 10	8	24.2	21	63.6	23	69.7	25	75.6	18	54.5	10	30.3	12	36.4	10	30.3	29	87.9							
		11 20	17	51.5	8	24.2	5	15.2	5	15.2	9	27.3	12	36.3	12	36.4	7	21.2	2	6.1							
		21 30	5	15.2	1	3.0	2	6.1	0	0	4	12.1	2	6.1	3	9.1	5	15.2	1	3.0							
		31 40	1	3.0	2	6.1	1	3.0	0	0	1	3.0	6	18.2	2	6.1	5	15.2	1	3.0							
		41 50	1	3.0	0	0	2	6.1	3	9.1	1	3.0	2	6.1	3	9.1	3	9.1	0	0							
		51 m	1	3.0	1	3.0	0	0	0	0	0	0	1	3.0	1	3.0	3	9.1	0	0							
S n d b l i s i m n d t l d f b l	17	0 10	3	17.6	7	41.2	11	64.7	10	58.8	6	35.3	4	23.5	3	17.6	4	23.5	10	58.8							
		11 20	4	23.5	9	52.8	6	35.3	4	23.5	3	17.6	3	17.6	4	23.5	0	0	5	29.4							
		21 30	10	58.8	1	5.9	0	0	3	17.6	4	23.5	2	11.8	6	35.3	5	29.4	0	0							
		31 40	0	0	0	0	0	0	0	0	2	11.8	4	23.5	1	5.9	4	23.5	2	11.8							
		41 50	0	0	0	0	0	0	0	0	2	11.8	2	11.8	1	5.9	1	5.9	0	0							
		51 m	0	0	0	0	0	0	0	0	0	0	2	11.8	2	11.8	3	17.6	0	0							

Testing Procedure After examination of the ear canals by a medical officer, employees exposed to dangerous noise intensities were evaluated for hearing level by means of a pure tone audiometer, the examination being repeated periodically. Unfortunately, pre-exposure audiograms had not been taken on these employees, some of whom have been working in noisy areas for many years.

At the beginning of the program a policy was established which requires pre-exposure audiograms on all employees who are to be assigned to danger areas. In addition, each employee was supplied with ear defenders and a helmet. It was recommended that these employees have additional audiograms after six months exposure. If it was determined that a hearing loss, especially in a range of 4,000 cycles per second, had been experienced, another audiogram was obtained on the following Monday morning to determine if there had been recovery during the two days' absence from the noise. If the loss persisted, it had to be considered that adequate protection had not been used or that the person was a poor risk for the environment. The latter had to be considered because wide individual susceptibility is generally recognized.

Audiograms were never taken on anyone who had been exposed to noise on the day of the test. In conducting periodic audiograms on large groups, five to eight were taken during the first hour of the working day.

Hearing losses are experienced from causes other than noise, and hearing capacity usually diminishes with increased age. Before any conclusion can be reached it is necessary that adequate histories be taken by qualified medical personnel and considered along with the audiograms.

SUMMARY

This article presents the experiences encountered in a hearing conservation program at a naval air station. A suitable audiometric testing chamber was set up and a comparison was made of binaural decibel loss in two different sound environments. The necessity of considering the environment in the testing of hearing is confirmed. The number of persons suffering hearing loss at various frequencies was found to vary with their occupation and proximity to the sources of noise. Forty one percent of a small group of sandblasters, for example, had a binaural loss of more than 10 percent.

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THE CAPTAIN OF THE MEN OF DEATH

With the wide use of antibiotics the fulminating infections of the past are becoming infrequent. Indeed, as opposed to a few years ago, we hardly ever see a case of lobar pneumonia in our large autopsy service. This disappearance of infectious diseases, and particularly of pneumonia, as a main cause of death should not lead us to infer that pneumonia and other infections are not still grave problems. The lives of most elderly people are terminated by infectious diseases, especially pneumonia, which complicate those diseases pertaining to the older age groups. The pathologist at the autopsy table is too frequently concerned with the basic disease which the patient has, and not sufficiently concerned with the terminating illness. It should be realized that many patients with cardiovascular disease, diabetes mellitus, or bronchiectasis could have lived months or years longer if it had not been for the terminating infection which often was a pneumonia. Osler, some forty odd years ago, characterized lobar pneumonia as the Captain of the Men of Death. Although the antibiotics have conquered lobar pneumonia, I should still select pneumonia as we know it today as the Captain of the Men of Death, since it is still the terminal event in many lives.

—DOUGLAS H. SPRUNT, M.D.

Soth M d l J nal

p 484 May 1954

PREVENTIVE MEDICINE IN THE ARMED SERVICES

MAJOR GENERAL DAN C. OGLE
Surgeon General U S Air Force

IT is my pleasure to attend the opening of this course covering subjects and purposes of high importance. This is my first platform appearance since being reassigned to Washington as Surgeon General of the Air Force, and I can think of no more fitting occasion than this one where we are initiating better understanding in the multiple fields of preventive medicine.

No phase of medical effort, whether it be in military or civilian medicine, contributes more to the stability and integrity of our profession's responsibility to humanity than does preventive medicine. This is particularly true in military medicine because our nation's security and economy are so dependent on the physical and mental efficiency of our limited military manpower. Each of our armed services is being called on to provide more effective defense with fewer available men. Fewer men must do more things: man more guns and ships, fly more planes, produce and maintain more materiel and complicated instruments of warfare. With 3,000,000 men in our military forces, a reduction of five points in the medical noneffective rate would save sufficient military manpower to man one war strength, fully supported in infantry division, about five medium bombardment wings, or the manpower equivalent of naval fire power. Translated into terms of national economy and applied to military medicine, such a reduction in noneffective rates would save enough money in one year to build and equip 30 beautiful 300-bed hospitals. Additional savings from such a noneffective rate reduction would include costs incident to the care of the sick—disability payments, recruiting and training costs for replacements, and personal losses due to illness or injury.

PREVENTION A UNIVERSAL MEASURE

The importance of preventive measures is not peculiar to the medical profession. In fact, I fear that medicine may actually lag behind industry and business in the development of preventive techniques. Within these fields much attention is given the

Presented at the opening ceremony of the course in preventive medicine at the National Medical Center, Bethesda, Md., on 16 August 1954.

preventive maintenance of buildings and homes by the use of inspections paint frequent repairs and replacement of defective parts Such is also true of machinery We are all prevention minded insofar as our private automobiles are concerned and a manufacturer who pays insufficient attention to maintaining his complicated instruments of production will not make a profit The concept of preventive measures is also affecting the economy of the nation We observe this in agricultural and industrial production controls processes designed to prevent a sickness of our national economy which would result in a depression We daily observe the ideological vultures who are admittedly standing by awaiting the development of symptoms of national weakness and decay

THE RESPONSIBILITY OF ALL PHYSICIANS

Preventive medicine's importance and requirements are denied only by the uninformed Yet we see many in the profession leaving such responsibilities solely to military preventive medical officer or to the meager public health personnel of civilian communities No physician should be absolved of his responsibilities in preventive medicine and the good physician will practice preventive medicine even within the confines of a limited specialty There is a tendency to sequester the public health or preventive medicine officer within a military staff and to turn the more knotty problems over to him without rendering him sufficient time and counsel to enable him to solve them The preventive aspects of prenatal care well baby clinics immunizations and periodic physical examinations throughout life are well accepted However we should go farther than this and inject the concept of preventive medicine into our everyday practice regardless of our particular specialty The military medical services have always taken the lead in preventive medicine and military successes secondary to this science are beyond our ready comprehension I need not review these many contributions nor the impact they have made on the picture of world history

ADDITIONAL ECONOMIC ADVANTAGES

In order to further illustrate the economic advantages of preventive medicine I believe that we can reliably estimate that each fully developed case of rheumatic fever contracted in the service costs the armed services about \$20 000 Each case of tuberculosis or other chronic disabling infectious disease is surely as costly Consider that one physician working an entire year could prevent even one of these cases from becoming a drain on the public economy and you have an idea of the degree to which preventive medicine pays off A more dramatic example can be found in the area of airplane accident prevention If

within the three services we could effect a one-percent reduction of accident costs we would save enough money to pay the yearly salaries and allowances of 370 majors in the Medical Corps

SCOPE OF PREVENTIVE MEDICINE

We tend to speak of public health and preventive medicine in terms of infectious processes. I believe that we must also include industrial health, accident prevention, and the health and physiologic measures necessary to properly adapt people to their working environment and vice versa. This very course of study you are now entering is an outgrowth of the preventive medicine effort of environmental adaptation in aviation medicine. The security of our nation may very well depend on the success in accident to mutually adapting men and machines, or men and weapons, to a satisfactory degree of stability, safety, and efficiency in a bizarre environment characterized by speed, acceleration, vacuum, heat, cold, radiation, blast, zero gravity, and time-stress factors—all of superlative degree. Today's greatest bomber has over 10,000 times the power of the first plane built by the Wright brothers. It will fly a thousand times higher and a hundred times faster than theirs did, and its range of flight, payload, and military effectiveness have been infinitely increased. All this in 50 years! My sincere hope is that we in aviation medicine are keeping pace with engineering progress. If I may project a hypothesis, let us consider that within the next 20 years or less we may create and man a machine that will go 10 times higher and 10 times faster than our most spectacular planes of today. Then we will have indeed reached the era of space medicine, and our present concepts of preventive medicine in the air will have to be reviewed accordingly.

If all of us here today were specialized in the fields of preventive medicine, our first responsibility would be to recognize our trust. No one group of medical men or engineers should or can become the legal custodians of men's health or welfare. The responsibility of preventive medicine is with us all. It is a branch of medicine with which all of us, both professional men and laymen, should be ever increasingly familiar. We depend on you who become better informed to help us in our mutual responsibilities to society. I wish you the greatest success in this course. May its value be a real one that you can show after returning to your regularly assigned duties. You are committed to a great trust of medical and national economy.

THE PASSIVE DEPENDENT VERSUS THE PASSIVE AGGRESSIVE PERSONALITY

JAMES R. HODGE, Lieutenant (MC) USNR

THE TERMS passive dependent personality and passive-aggressive personality are relatively new in the psychiatric nomenclature. They are terms in frequent use today especially in the armed services and in the Veterans Administration but most descriptions are short summaries such as appear in the *Joint Armed Forces Nomenclature and Method of Recording Psychiatric Conditions*¹ and the *Veterans Administration Technical Bulletin 10-A 78*.² These brief characterizations are of little value to the general physician who has not had the experience to form a definite picture of these personality types. To the uninitiated the term passive-dependent may seem redundant whereas the term passive-aggressive may seem contradictory. Actually these are very apt terms and each implies a characteristic clinical appearance and historical development. The character sketches drawn here are composites of features found in varying degrees and number among these patients.

Both syndromes belong to what psychiatrists call personality disorders or character disorders. These terms imply a course of development from early childhood to the present time—a logical progression of events from one point to another so that the current appearance is the result of a characteristic life history. The character disorder then has progressed and become fixed in a rigid structure over a period of years and represents an adaptation of the person to his environment or a philosophy of life.

THE PASSIVE DEPENDENT PERSONALITY

The passive dependent character is a boy in man's clothes. He is the child who never got away from his mother's apron strings. In addition to being emotionally immature, he is frequently immature physically but this is not always so. Phenomenologically we see this type of person as helpless, indecisive and clinging to stronger figures—parent substitutes. He characteristically becomes anxiety-ridden when faced with responsibility.

He is almost always extremely close to his parents and emotionally dependent upon them especially his mother. Having been

From Medical Corps, Camp Pendleton, California. Hodgson is a University of California graduate and 2065 Adjunct Resident Physician.

overprotected by a supersolicitous mother, he would not consider making decisions without consulting her—or without consulting his father if he feels the need to mollify his dependency. Leaving home, even for a short period of time, is about the most terrible experience imaginable for him, he never severs his close ties with home. After he is married, if he ever is, and then only to a mother substitute who is usually several years older than he, he lives in the same town, same street, even the same house as his parents. He brings his marital squabbles home to Mamma's big bosom and embracing arms. If he should inadvertently marry a woman who makes any extensive physical, social, sexual, or economic demands of him, he feels inadequate, occasionally defensive, and unable to cope with the situation. Indeed, at such a time he may feel incapable of coping with life in general, and he characteristically seeks surcease in alcohol. As described by Knight,³ the typical alcoholic is a passive dependent character.

When things seem really bad, the passive-dependent is likely to make a suicidal gesture. He may honestly feel at such a time that he wants to die, and he may accidentally even succeed in killing himself. The gesture, however, is typically a bid for sympathy and a return to the state of being taken care of, though it is frequently a reaction of hostility toward a parent or parent-figure by whom he feels rejected. It is as if he were saying, "You'll be sorry when I'm dead and gone."

The life history of the passive-dependent person is typically benign and "happy" unless evidence of separation anxiety is obtained. He is usually a "good" baby and rarely a feeding problem until the time of weaning, which he may resist strongly. He eats well, especially taking a great deal of milk. His general development is fairly normal, and he is described as a "good" or "happy" child. He is very close physically and emotionally to his parents who make a habit of overprotecting him. His early life is characterized by "Don't" and "Oh, my poor—". He may be a behavior problem until he accepts the passive response to "Don't," and comes running to Mommy with every minor physical and psychic bruise.

Once he has accepted this passivity, his character is set for life and his goal is to maintain it. Later on, he may attempt to deny it consciously and go through a period of social rebellion or psychosomatic illness. This is usually determined by social pressure upon him to "grow up" and "be like a man." But when the chips are down he reverts to a passive, frequently weeping self-centered state in which he feels sorry for himself and wants others to do the same.

His first noticeable period of anxiety may be when he starts school and is separated from his mother for the first time. Extreme forms of the dependency foisting mother are seen in the one who daily walks Johnny to school or the one who wishes to make him independent—she follows along a block behind. The children do not do well in summer camps if they ever get there. Being victims of smother love they become frightened and homesick. They run crying home to Mommie at the slightest threatening gesture from their playmates. In the presence of Mommie and usually with her implied approval they usurp the toys of their playmates but they do not share their own. When they are separated from home long enough as for example in school and can find a satisfactory protective parent-substitute who will give all the attention they demand they get along quite well. After all their desire is to please the parent-figure—to be a good boy. They frequently study hard and make good grades in an effort to please. While at home they may be given feminine chores such as washing dishes dusting cleaning even sewing and cooking. They develop feminine identifications and may even become passive homosexuals.

The school career then of the passive-dependent person is not remarkable. He is usually sissified to some degree and prefers the company of older girls. His work adjustment may be quite satisfactory especially in the presence of an understanding sympathetic superior who doesn't object to a little apple polishing. He works diligently in an effort to please. But as he grows older and more skilled he is promoted instead of receiving attention he is expected to give it. Instead of being told what to do he is expected to give orders and make decisions. With his increased responsibility he becomes helpless indecisive and anxious.

It is usually at about this time that he becomes married if ever at all to an older girl who reminds him of his mother. She may be dominating and solicitous yet she also wishes to be treated like a woman. When her husband is reprimanded at work for his inefficiency she may cuddle him and sympathize with him but he will probably berate him as well not only for losing his job but also for his general inadequacy as a man. Usually by this time his father is dead, ill or financially insecure and the passive-dependent character feels compelled to contribute to the support of his mother. And his wife castigates him for that, too.

This situation may precipitate a mild to severe anxiety state it may eventuate in a "psychosomatic" illness such as ulcerative colitis headache backache obesity alcoholism or the anginal syndrome. If he attempts to improve himself—to become more aggressive—he may be rewarded with a peptic ulcer.

Of course, he may be able to make some kind of adjustment at any of these levels. His marriage, if it lasts, may result in his adjustment as a passive, henpecked Mr. Milquetoast in a constellation of chronic tensions and hostilities. He may return to Mother, even give up his job, and help about the house while getting fat on "Mother's good food." He may obtain the attention he requires by an incapacitating illness. In the extreme form, as he grows older and older he becomes a physical and psychological wreck, progressively more dependent on his wife and children, if any, whom he has brought up to be little passive dependents, or rebellious delinquents.

THE PASSIVE AGGRESSIVE CHARACTER

The passive aggressive character is the man you don't like. You can't like him because he doesn't like you. He has a grudge against society, especially against authority, and he shows it. He shows it in his own passively aggressive way, so that you are aware of it but can't actually put your finger on it. The most important thing for him is to commit an act which demonstrates his hostility, but remains "just within the law."

He seems to be on a perpetual sitdown strike. It is not always necessary that the act be recognized. In the military services this may be expressed as refusal to salute an officer. Other passive aggressives salute very happily—with the thumb more or less obtrusively touching the nose! This type of character has been humorously typified as the sky writer who takes his airplane behind a cloud and writes "nuts" all over the sky. He typically expresses his hostility and aggression in such passive ways as stubbornness, procrastination, inefficiency, ignoring the social amenities, forgetting names, and showing disrespect in general.

His behavior may be deliberately antagonizing. Given a job to do, he may refuse with a surly remark, then shuffle off and perform it in a procrastinating, inefficient, lackadaisical manner. Reprimanded for his refusal, he points out that he actually did the job; then he feels wronged and persecuted. This serves to confirm and increase his resentment against authority, yet he may remain completely unaware of his own part in the total proceedings. When he is frustrated or cannot get his own way, he may injure himself, make a suicidal gesture, or threaten suicide. This behavior is analogous to the temper tantrum of the two-year-old child. It is as if he were saying, "If you don't do what I want, I'll hurt myself and then you'll be sorry."

It can easily be seen then that passive aggression is an attitude. It is an attitude upon which behavior is based. Any act can be passive-aggressive in nature, even exaggerated efficiency.

and respect, and this is one reason why these personalities are not always recognized as such. After all, the goal of these men is not to have their acts pinpointed as aggressive but to express hostility without its being recognized. Just as neglecting to say

Sir can express disrespect and hostility so can a little extra emphasis on the word show the same thing yet the latter action cannot be criticized. These men will go to any extreme to avoid work. They will actually work harder at avoiding duties than they would have if they had gone ahead and done the job. They will not be at hand when assignments are given out, or they will appear extremely busy (for the moment) doing something else. They will actually hide or perhaps feign illness to avoid work. They make frequent trips to the water cooler or the rest room. Their intent is not merely to avoid work but more important to express their hostility toward the authority which forces them to do the work. By the time they reach the age of 17 or 18 however this intent has lost a great deal of its consciousness and may not be recognizable to the men themselves or to the casual observer. When apprehended and criticized for their disrespect and avoidance of work their basic sullenness and resentment may show itself in silent contempt, a mumbled half-intelligible epithet, or even in some cases an overtly sneering remark. The sullenness and resentment on the other hand may be covered over by protestations of innocence or misunderstanding but they are rarely accompanied by a promise to do better in the future. These men are the classic ten percent who never get the word.

The passive aggressive aspects of character need not always be considered bad however. As a matter of fact these are considered by many to be among the least undesirable of the immature personality reactions. The passive aggressive person is usually shrewd and can judge a situation fairly accurately and quickly. He is frequently known for his biting cynical wit and satire. He has to know exactly how far he can go without getting into serious trouble. He has to know something about the personality of the person to whom he wants to show his disrespect. Can he—and should he—refuse an order or would it be easier and just as effective to be a few minutes late for an appointment? If the latter should it be two minutes or 20 minutes? This is a trick that many mildly passive aggressive persons use to demonstrate that a love affair has ended.

The passive aggressive tendency as may so many others may originate in conflict with parents who are typically very strict, harsh, and domineering. They stultify the child's emotional development by destroying his basic trust in them. They cannot tolerate the child's natural expressions of hostility and resentment. Even in infancy and early childhood the child realizes that it is too dangerous to overtly express hostility, resentment even

fear or tears. His attempts at showing affection are also rebuffed, for the parents are usually hostile to the child. So an ever widening vicious circle is set up. The child is rebuffed, rejected. He expresses his hostility in passive ways such as refusal of food at mealtime but eating between meals, bedwetting, demanding repeated glasses of water or trips to the toilet after retiring, stammering, and general apparent delay in development. It can be seen from those descriptions that the passive aggressive act serves as an attention getting mechanism. A scolding or a spanking is considered much better than no attention at all. Thus his goal becomes to get the most attention at the smallest price.

This child is a feeding problem, toilet-training problem, and behavior problem in general. His acts are annoying to the parents but not actually punishable. Frequently the parents, at the end of their tolerance (which is relatively little) will spank the child "on general principles." And gradually the desire for attention is driven further and further into the unconscious until only the phenomenology of the passive aggressive character remains apparent.

The passive aggressive may be a behavior problem in school, transferring to his teachers the attitudes he maintains toward his parents. Whether he learns well or poorly, he is a thorn in his teacher's side. He is frequently late or truant. His lessons are not prepared and his assignments are turned in late. Until he learns how far he can go, he may be in frequent fights with the other students. He tries to break the rules of games without being caught, but when he is caught he insists that he did not break a rule or blames it on someone else. As he grows older, symptoms such as bedwetting and stammering may persist, while he becomes a juvenile delinquent and is arrested for acts of vandalism, traffic violations or "on suspicion."

In the military service or on the job he is considered a "fluff off" or "gold brick." The hostility he engenders in his superiors by his resentment and passive-aggressive behavior results in his being assigned the more undesirable duties. Then his resentment and feelings of being "picked on" are increased. He takes advantage of minor illnesses to get out of work. Backache, headache, and painful feet are his favorite somatic complaints.

Like those with other personality disorders, he loves neither deeply nor well. His love and married life is characterized by his selfishness, suspiciousness, and jealousy. The girl who can tolerate his behavior is the long-suffering, masochistic type but frequently her patience wears thin too and the marriage ends in divorce. Because the manifestations of this condition are so protean, the characters of the children are also varied. The parents manipulate the children to obtain their support in the

family arguments The children have no really strong character with whom to identify and usually become weak willed passive shy withdrawn selfish helpless and indecisive On the other hand they may overreact and become hostile overtly aggressive juvenile delinquents

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CIGARETTE COUGH VS LUNG CANCER

The recent great excitement about the role of cigarette smoking in lung cancer has overshadowed all the other ill effects from the use of tobacco The writer refers particularly to the disturbing chronic cough of the heavy cigarette smoker of long standing While the cough is not as devastating as cancer it is nevertheless serious especially in older people who have smoked a long time The curious thing about this is that the textbook in their discussion of tobacco and its toxic effects do not mention the cough and yet this is practically common knowledge No greater proof that every layman is aware of it is needed than the famous advertisement of recent years by a leading cigarette manufacturer which was broadcast far and wide Not a cough in a carload

While the writer cannot say definitely that this irritation and resulting cough play a part in cancer of the lung one can say that there seems to be a certain relationship since it is more prevalent among older people smokers of long standing The writer thinks it important to advise people who have developed this kind of cough to abstain from smoking They will be rewarded comparatively quickly by getting rid of a nasty and irritating cough and perhaps avoid even more serious trouble

—MAX H WEINBERG M D
P nsyl Md I j nal
p 1000 Oct. 1954



Clinicopathologic Conference

U S Naval Hospital Bethesda, Md *

PLEURAL EFFUSION

Summary of Clinical History A 36-year old Negro woman entered the hospital on 28 May 1954 complaining principally of shortness of breath and pain and tenderness in the left side of the chest of about two years duration

She had previously been hospitalized on 31 August 1950 because of "indigestion," some left thoracic pain, shortness of breath, and orthopnea and was discharged after one month feeling much improved. Several smears, cultures, and guinea pig inoculations from sputum and gastric washings were negative for acid fast bacteria. Until a few weeks previously she had been able to continue to work in a restaurant despite moderate exertional dyspnea and left thoracic discomfort. About two weeks before admission she became very short of breath again and had several bouts of profuse perspiration and slight orthopnea. She was treated at the dispensary for "gas pains" and was also given antibiotics because of abnormal left lung findings, with some relief. On this admission she specifically denied any cough, hemoptysis, or syncope, but had moderate ankle edema on completion of her day's work on two occasions. She had been awakened several times in recent weeks with acute shortness of breath, but had been able to return to sleep without therapy. There was no history of past or present cardiac medication.

The past history revealed that she had always been an active person, with the exception of hospitalization at the age of 18 when hysterectomy and possibly oophorectomy were performed because of pain in the right side of the abdomen and severe menorrhagia unsuccessfully treated medically. About 12 years ago a routine chest roentgenogram taken at a hospital revealed evidence of left lung and left rib-cage abnormalities which were

discussed with her and were followed serially, at six monthly intervals at first and subsequently with yearly roentgenograms. She was told that she did not require hospitalization and no therapy was offered. The exact nature of her thoracic problem was not explained to her.

She has always been aware of asymmetry of the left side of the head and face with proptosis of the left eye. Significant data obtained from her aunt indicates that she experienced her first menstrual period at one month of age with regular recurrence of periods at monthly intervals until 18 years of age when hysterectomy was performed as noted above. Medical investigation of this precocity was never solicited.

The family history was essentially noncontributory. One brother died at two years of age from pneumonia. Another brother now 44 years of age, has diabetes mellitus.

She was married in 1936 at the age of 18 but never experienced pregnancy. Libido appeared to be within the limits of normal.

Her weight had not changed appreciably over the past five years. Eyesight had remained normal. There were no significant headaches. There was occasional mild right knee discomfort without swelling, and a similar rheumatic complaint was present in the left shoulder area. She never observed abnormal skin pigmentation and never suffered fractures or other bony change except the asymmetry of the skull as already stated. Spontaneous nosebleeds recurred frequently throughout childhood but none after the age of 20.

Physical Examination. The patient appeared to be slightly dyspneic on mild effort but fairly comfortable while seated. Blood pressure was 110/80 mm Hg, pulse was 70 per minute and regular and temperature was 98.2° F. Her weight was 120 pounds (average 130-135 pounds). There was an asymmetry of the skull with prominence of the left hemicranium chiefly in the frontoparietal area, moderate proptosis of the left eye and some prominence of the left orbital area. The head appeared globular and large. A consulting ophthalmologist reported normal fundi with the exception of slightly shallower cupping of the left disk as compared with the right, slightly greater resistance of the eye to digital pressure and normal visual acuity, peripheral fields and muscle balance. Exophthalmometer measurements (Hertel) revealed 19 mm in the right eye and 24 mm in the left eye. The thyroid was small and there was no significant enlargement of lymph nodes in the neck or abnormal prominence of the neck veins. There was slight scoliosis toward the left side. There was a definite inspiratory lag involving the left side. The tra-

chea appeared to be deviated slightly to the left. There was dullness to flatness on percussion over most of the left hemithorax with marked diminution of breath sounds and vocal fremitus. The right hemithorax was normal except for shift of the mediastinum to the right. There was tenderness over the second and third ribs on the left side anteriorly with palpable irregularity in the contour of several ribs. The point of maximum cardiac impulse and the heart tones were best heard to the right of the midline. No murmurs were heard. The liver edge was palpable two fingerbreadths below the right costal margin. The peripheral pulses were normal and there was no pedal edema. There was normal motion throughout all of the extremities and no clubbing of the fingers. A pelvic examination was nonrevealing. Secondary sex characteristics were within the limits of normal.

Laboratory Studies The leukocyte count was 5,850 per cu mm, differential, neutrophils 60 percent, lymphocytes 28 percent, monocytes 4 percent, eosinophils 8 percent, hemoglobin, 11 grams per 100 ml, hematocrit 39 percent, blood urea nitrogen 20 mg, uric acid 4.3 mg, serum calcium 9.9 mg, inorganic phosphorus 4.4 mg, all per 100 ml, alkaline phosphatase, 12.6 Bodansky units, urinalysis, negative, serologic test for syphilis (Kahn), negative, total serum protein, 6.5 grams, albumin 4.2 grams, globulin 2.3 grams, all per 100 ml, serum chlorides, 95 mEq/L.

A gastrointestinal series revealed displacement of the esophagus to the right and posteriorly by what appeared to be aortic arch and possibly auricular indentation. Excretory urograms failed to reveal evidence of renal or ureteral calculi.

Course in Hospital Thoracentesis was performed on 23 June 1954 with removal of about 420 cc of amber-colored fluid. The procedure was performed with some difficulty because of the impression that the needle quickly entered into dense intra-thoracic tissue. Analysis of the fluid revealed 917 erythrocytes per cc and 60 leukocytes per cc (40 granulocytes and 20 lymphocytes). Smear and cultures of the fluid failed to reveal organisms. Bronchoscopy was not performed.

On 13 July 1954 thoracotomy was performed through the fourth left interspace with removal of a rib and aspiration of straw-colored fluid. A biopsy of the lung tissue was obtained and the incision closed.

The patient has made a satisfactory postoperative recovery, has minimal exertional dyspnea at the present time, and is preparing to return to work.

DISCUSSION

Do to Z kmu d I would like to call on Doctor Fries to show us the x rays in this case

D : F Before showing the x rays I would like to present the photographs of this patient made four years ago in 1950 at the time of her first admission (fig 1A and B) They demonstrate enlargement of the left hemicranium and facial bones with proptosis of the left eye



Fig 1 Photograph of patient 1950 demonstrating enlargement of the left hemicranium and facial bones with proptosis of the left eye (A) Frontal and (B) de v ew

We have photographs from this admission (four years later) and the findings are similar indicating that no apparent change has taken place The x ray findings in the skull correspond to what is seen clinically (fig 2A and B) The entire left side of the skull and the facial bones are involved by a bony disease We see alternate areas of density and radiolucency and expansion to the left hemicranium The largest measurement of the expanded skull is 7 cm The lesion extends to the midline with a normal cranium on the right side You can see that the rim of the right orbit and the mandible are within normal limits The Waters view very clearly demonstrates the tremendous enlargement of the skull resulting in encroachment and erosion of the outer table of bone in addition to involvement of the inner table

We have a chest x ray from the previous admission four years ago demonstrating a large dense mass involving the entire left chest with a shift of the mediastinal contents including the heart to the right side The right lung appears normal (fig 3) There is an expanding radiolucent lesion involving the entire right eighth rib A similar lesion involves the third left rib

Comparing the present x rays with the studies made four years previously we find no change in the skull chest or rib lesions. Because the chest lesion shows no change it can be assumed that it may represent a benign process. We believe this chest lesion can possibly represent a manifestation of fibrous dysplasia. Our reasoning is as follows. The skull is of tremendous thickness indicating that extensive fibroblastic growth has taken place. This same process could be present in the left third rib with the production of a large dense mass growing

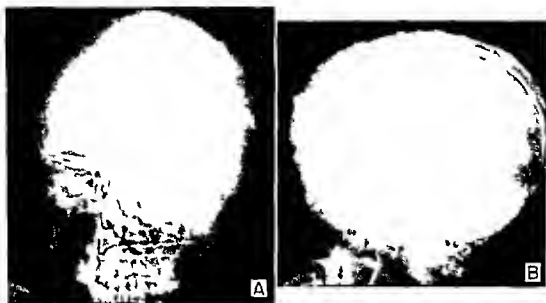


Figure 2. Skull roentgenograms showing involvement of the entire left side of the skull and the facial bones with alternate areas of density and translucency (A) Posteroanterior and (B) lateral views

into the left thoracic cage. The thoracentesis and diagnostic pneumothorax were helpful because the injected air defined the lower limits of this mass. Because air did not dissect superiorly to separate the mass from the chest wall it was assumed that the origin of this tumefaction was somewhere in the superior part of the left thoracic cage most likely in the third rib. In the differential diagnosis more likely than fibrous dysplasia would be a large teratoid tumor because these tumors grow to large size and may not change over a period of years. The third possibility would be a benign mesothelioma.

Doctor Z kmund: Thank you. I would like to call on Doctor Carr* for comments on the skeletal lesions seen in this case.

Doctor Carr: In a lesion such as Doctor Fries has demonstrated and such as our history gives us we have to think of lesions of bone which have their origin in the medullary portion of the bone and which expand bone. In this particular lesion we have gone through the sections previously as well as the x rays apparently there are no long bones involved. We note lesions involving the skull ribs and at least one vertebral body.

*Capt. C. R. Carr (MC) USN Chief of Orthopedics.

Those lesions which commonly give pictures with many variations of an expanding medullary lesion of the bone may be listed for purposes of reference these include solitary bone cysts giant cell bone tumors fibromas of bone (which are usually considered to be due to cell rests or arrest of development in ossification of an individual bone) enchondromas which are quite often confusing because they can be multiple



Fig. 3 Chest roentgenogram in 1950 demonstrating a dense opaque density involving the left chest with a shift of the mediastinal contour to the right.

the cystoid forms of myeloma Paget's disease osteodystrophia fibrosa generalisata (this is the older term of course for von Recklinghausen's disease of hyperparathyroidism and its several manifestations) skeletal xanthomatosis and the fibrous dysplasias polyostotic and monostotic

Let us cover xanthomatosis quickly. There is a whole group of these which are usually considered as "storage diseases" of bone. The pathologist and the bone physiologist will probably argue with me a good bit about whether they are storage diseases of those particular substances, but in general disturbances in metabolism of keratin, phosphates, and the cholesterol will give some clue as to the type of lesion. These are Gaucher's disease, Niemann-Pick disease, Hand-Schüller-Christian disease, and generalized osseous xanthomatosis. If we considered the skull alone, one would be quite suspicious of the Hand-Schüller-Christian syndrome.

I am inclined to believe that in this case fibrous dysplasia probably offers the best diagnostic possibility depending upon the findings of the biopsy which would differentiate it from one of the types of storage disease, notably the xanthomatous lesions. This girl did have precocious puberty. We have no evidence of pigmented spots. She is Negro and I am not familiar with the incidence of pigmented spots in Albright's syndrome in the Negro race. I hope Doctor Jeghers will be able to give us information on this. Albright's disease or Albright's syndrome is simply one manifestation of fibrous dysplasia.

Lichtenstein and Jaffe in 1942 attempted to classify this whole group of bizarre developmental diseases of bone of this type under the term fibrous dysplasia, and I think that it is a useful classification. Albright's syndrome is one peculiar variant, probably a rather advanced one with its onset early in life.

In the differential diagnosis, hyperparathyroidism is to be considered. Remember that in hyperparathyroidism we usually have a high serum calcium, low serum phosphorus, and increased urinary calcium output, whereas in the various fibrous dysplasias we seldom if ever have any disturbance in blood chemistry unless it is in the phosphatase as a result of increased activity in the bones. Another thing that might be of some concern is Ollier's disease, which is a synonym for dyschondroplasia. This affects the epiphyses, whereas fibrous dysplasia seldom affects the epiphyses. Another condition to be differentiated is neurofibromatosis, which can give many and varied cystic lesions of the bone but is usually associated with pigmented spots and also with multiple tumors along the segmental distribution of peripheral nerves. The other diseases considered in the differential disqualify themselves pretty generally from the story we have heard, and I shall not cover them one by one. I think this case is unique and I hesitate to classify it strictly speaking with Albright's syndrome (1) because it lacks pigmentation of the skin and (2) because the long bones, as far as I know, are not involved. From a nosologic viewpoint, I think if we give a disease or syndrome an eponym, it should be almost identical with the original description.

Those lesions which commonly give pictures with many variations of an expanding medullary lesion of the bone may be listed for purposes of reference these include solitary bone cysts giant cell bone tumors fibromas of bone (which are usually considered to be due to cell rests or arrest of development in ossification of an individual bone) enchondromas which are quite often confusing because they can be multiple



Fig. 3. Chest roentgenogram 1950 demonstrating a large osteolytic lesion involving the left rib with a shift of the mediastinal contents to the right.

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D r Zikm nd Thank you Doctor Carr Doctor Hill will you come up front here behind this microphone and comment on the features of her sexual precocity?

Do r Hill From the gynecologic standpoint we are interested in these people because of the fact that they have precocious puberty. However although they may have some vaginal bleeding it is not a true menstruation because it is not associated with ovulation. It is really a passage of blood from the vagina always irregular and it may start at a very early age in life in childhood or at any time in the teens. Then when these girls get to the age of puberty they will usually settle down and have normal menstrual periods. They also may conceive and bear children at a later stage in life. These ovaries usually do not ovulate. We do not know why. One reason given is that the changes in the base of the skull suppress the anterior pituitary. This particular patient has had a disturbing surgical history because at the age of 18 she underwent a subtotal hyst rectomy and removal as far as she knows of both ovaries and tubes. It is not clear as to just why this was done anyhow pelvic examination at the present time shows a typical castrate pelvis. The vagina is dry and pale and is very firm and smooth. The cervix is just a dimpled structure and very atrophic. The corpus is absent and the adnexal regions are negative. It was interesting to me to learn that she has a normal libido and has always had a normal sexual response in both of two marriages. Two years ago she went through what she thought might have been a menopausal syndrome as suggested by nocturnal sweats and numerous hot flushes followed by cold sensations. This gradually disappeared. Now whether this is associated with ovarian absence or whether it may be failure of the adrenal to produce estrogen is not clear. Maybe the adrenals have been producing estrogen for several years for this patient as we think they do sometimes and this has finally ceased. These of course are suppositions. Regarding this patient's secondary sexual characteristics the left breast is smaller than the right although she attributes this to recent thoracic surgery. The breasts seem to be very small on both sides. There is normal suprapubic and axillary hair and the external genitalia have normal development for a person of this age. That is about all we have to contribute on this particular patient. Sexual precocity can also occur in male children with this syndrome but not nearly as often as in female children. The fact that the female patients do have menstrual disturbances in cases in which the skull is not involved tends to show that dysplasia of the base of the skull is probably not an explanatory factor associated with the anterior pituitary.

D r Zikm nd Thank you Doctor Hill. At this moment I would like to ask Doctor Flipse to comment on the chest x ray with particular emphasis on the frequency of this type of chest lesion in this or related bony diseases.

Doctor Flipse First of all I would like to make a few general remarks on the so-called blacked-out lung. When one sees an opaque hemithorax on a chest roentgenogram the problem is to decide whether there is a congenital or acquired absence of the lung, an atelectasis or collapse of the lung either alone or associated with fluid, a diffuse pulmonary disease such as pneumoconiosis, a large intrathoracic tumor, or pleural disease. In this particular case we can rapidly exclude the first three considerations on the basis of the history, the physical findings, and x-ray evidence of a space-occupying lesion in the left hemithorax. Thus we are left with two possibilities—some type of intrathoracic tumor or pleural disease. As far as the diseases of the pleura are concerned it is helpful to differentiate between inflammatory, mechanico-circulatory, and neoplastic diseases of the pleura. Adequate study of the pleural fluid greatly facilitates this differential diagnosis. In this case the initial thoracentesis was traumatic with bloody pleural fluid, whereas the second fluid specimen removed at the time of operation was clear and sterile. Thus we are dealing with a sterile hydrothorax, thereby excluding a hemothorax and chylothorax. These findings, in addition to the other data, tend to exclude inflammatory disease of the pleura. The neoplastic diseases of the pleura may be benign or malignant, primary or secondary.

There is a recently emphasized entity, the so-called localized fibrous mesothelioma of the pleura, which I would consider most seriously in my differential diagnosis in this case. This entity has been well described by Clagett and his associates in the September 1952 issue of the *Journal of Thoracic Surgery*. Localized fibrous mesothelioma of the pleura is a benign tumor and should be clearly distinguished from a malignant pleural mesothelioma. It has been seen in patients from 20 to 70 years of age and has been known to be present for from one week to eight years before its successful surgical removal. Its weight has varied from nine grams to 5,000 grams. One reported case is quite similar to the pulmonary problem presented by our patient. There was a similar chest x-ray in a 36-year-old woman presenting symptoms of dyspnea and a known duration of disease of five years, from whom a 4,000-gram tumor was removed. These tumors are frequently associated with massive pleural effusion and about 60 percent of the patients have digital clubbing or rheumatoid arthritis-like symptoms. This tumor is benign and the patients are cured by operation, so it is important to consider it in spite of its rarity.

As far as mechanico-circulatory disturbances of the pleura are concerned, it is well known that large intrathoracic tumors, both benign and malignant, can produce pleural effusion by pressure or resultant thrombosis in the vessels of the mediastinum and chest. The thoracentesis and replacement of a portion of the fluid with air proved that this patient did have a large tumor arising in the upper left chest associated with a pleural effusion. It is impossible to say whether the tumor had its origin in the lung, the pleura, or the chest wall. It certainly cannot

be a malignant tumor to have been present for over 12 years and to have been basically unchanged in the past four years.

It is interesting to speculate if this tumor had any relation to the underlying fibrous dysplasia of bone. This patient does have extensive involvement of the ribs on the left and there is a firm swelling of the left upper anterior chest wall so that conceivably this tumor could represent an extension of her bone disease. However, in the literature and in Doctors Albright and Reifenstein's text *The Parathyroid Glands and Metabolic Bone Disease*,² no similar case has been reported. Doctor Albright does state that a few of these patients die of cor pulmonale. He does not mention the pathogenesis of this right heart failure so I assume it must be secondary to thoracic cage deformity for there is no record of pulmonary involvement in this disorder.

Doctor Zikmund: Thank you, Doctor Flipse. Doctor Berley, will you tell us what the thoracotomy procedure disclosed?

Doctor Berley: An operation was performed on 13 July 1954 under thiopental sodium (sodium pentothal)—nitrous oxide—ether anesthesia. The patient was placed in a left lateral position and an incision was made and carried down over the sixth rib. The periosteum was elevated and a large segment of this rib was resected and sent to the pathology department for examination. The pleura was immediately seen to be thickened and firm and as it was opened a large lobulated tumor was evident. This tumor appeared to be a firm calcifying mass occupying almost the entire left chest cavity and was firmly adherent to all the mediastinal structures and to the left chest wall. It was obviously not amenable to surgical removal. A biopsy of the specimen was obtained and closure was effected.

Doctor Zikmund: Thank you. That gives us the basic data in the case. Doctor Jeghers: Would you, with the information presented at this time, discuss the differential possibilities and add comments pertinent to the presentation at this point?

Doctor Jeghers: I would like to discuss this case in the form of not knowing any of the new facts brought out today; in other words, what would be the reasoning if one went through this case with just the data available in the printed case history.

This is the history of a 36-year-old Negro woman who is alive. This offers the helpful point that we are dealing with a more benign condition than might otherwise be the case in the average clinical pathological conference. There is enough data from prior medical studies to give a good background for discussion. Doctor Zikmund has read the case history in detail and I will not repeat it.

In going over this case history it is apparent that three pivotal points may be brought out for discussion. The first is the precocious

menstrual bleeding the second is the multiple skeletal abnormalities and the third is the nature of the disease of the left thorax with pleural effusion

As a general rule it is best to have a differential discussion to consider two fundamentally different approaches and to reason them out separately if possible. The first line of reasoning centers about the question of whether the whole clinical picture can be explained on one basic underlying pathologic condition or whether multiple conditions are present. Unless our reasoning explores both paths we may frequently overlook various diagnostic possibilities.

I would like to discuss three aspects of this case taking up first what the thinking should be with regard to precocious menstrual bleeding which can be looked upon as part of the problem of sexual precocity.

First with regard to the sexual precocity which implies increased sexual development and function occurring prior to the usual accepted age in a female precocity with heterosexual characteristics commonly results from a disease of the adrenals and would be manifested by such features as an increased size of the clitoris increase in hair (hirsutism) et cetera. This can be immediately excluded. When isosexual characteristics predominate as they do in this case various other possibilities must be considered. First is there a lesion in the region of the hypothalamus such as a tumor or an inflammatory disorder? Relatively few such instances in the female sex have been recorded. The long duration of the history of this case would be against this diagnosis.

Secondly one considers the idiopathic form which is believed to be sort of a functional increase in activity in the hypothalamic center producing early activation of the gonadotropins. This is a very definite possibility. Frequently when no other reason can be found one ends up with the diagnosis of an idiopathic type of sexual precocity.

Thirdly sexual precocity may develop as a result of some tumor commonly of the ovary with excess hormonal secretion capable of producing this clinical picture. A representative example commonly given is a granulosa cell tumor of the ovary. If this were true the operation on the pelvis at the age of 18 would have brought out this point. The long course is also against this diagnosis as is the fact that a granulosa cell tumor is not associated with bony abnormalities.

Next to be considered is Albright's syndrome which, in the female is characterized in a considerable percent of cases by sexual precocity. The mechanism of the sexual precocity in Albright's syndrome is not clear but it may be on some hypothalamic basis. Influence of skull changes on hypothalamic function or some changes in the mammillary bodies are among the reasons proposed. Thus although the explanation is not clear it is certainly well accepted that sexual precocity is an important part of the Albright's syndrome.

Another possibility which can be readily excluded is that early in life for some reason this woman received medication with estrogenic substances. In looking over those various possibilities the two which seem most reasonable in explaining on a common pathologic basis the bone lesions the sexual precocity and the features in the chest would be a tumor (either in the hypothalamic area or an ovarian tumor capable of producing estrogenic substance) associated with metastases. The possibility of a tumor with metastases can be excluded by virtue of the long duration. Albright's syndrome certainly stands on firmer ground in explaining sexual precocity and bony changes.

The various possibilities suggested by the next feature of the case multiple skeletal abnormalities can now be considered. My first consideration is whether in any way this could be due to a postmenopausal type of osteoporosis. This lady supposedly had a bilateral oophorectomy at the age of 18 and then later in life developed multiple bone changes with an increased alkaline phosphatase and at least one probable bony fracture. The common pattern in postmenopausal osteoporosis is primary involvement of cancellous bones which means essentially the vertebral bodies and the upper ends of the femurs. With osteoporosis the vertebral bodies often collapse rather than manifest scoliosis and the femur shows the classical fracture of the neck. This is not true in this case and this diagnosis can probably be excluded.

Is this hyperparathyroidism with osteitis fibrosa generalisata? The characteristic blood chemistry changes are lacking in this patient. Furthermore there is no association with sexual precocity in this disease. Also the abnormalities in the skull are not the type to go with hyperparathyroidism. I think this diagnosis might well be excluded.

Is this one of the lipid granulomatoses? The xanthomatoses or an eosinophilic granuloma would be two possibilities. The bone lesions are more apt to manifest a punched out appearance on the roentgenogram and often respond to radiation therapy. I am sure that biopsies have been taken in the past and the diagnosis would have been made if present. An eosinophilic granuloma sometimes has an eosinophilic blood response. There is an eight percent eosinophilia in this patient but I do not think that that is enough to lead one to this possibility. The overgrowth of bone here is also against it.

Is this some form of multiple metastases? If the bone lesions had existed for only a short time this possibility would have to be considered. The long duration of the bone lesions are against it as would be the lack of a primary site for the origin of the metastases. In other words could this be benign sexual precocity with the lesion in the chest as the primary tumor source and the bone lesions metastatic from it? Even here the duration of the chest lesion is much against a type of tumor such as bronchogenic carcinoma with metastases to the bone. I think one may well exclude this. The ovaries have been removed in this patient. The picture is not one of an adrenal tumor. We

would be hard put to find a primary site to explain multiple bone metastases

Is this von Recklinghausen's disease of the neurofibromatosis type? This possibility must at least be considered because it often causes multiple bone lesions. This patient lacks the characteristic *cafe au lait* pigmentation. However, it is sometimes difficult to demonstrate in Negroes. There are no skin fibromata. Particularly in women, this condition does not lead to sexual precocity. For these reasons, I believe that it would be a difficult diagnosis to establish.

We come finally to polyostotic fibrous dysplasia, Albright's syndrome. This entity is characterized by a somewhat segmental type of bone lesion distribution involving various parts of the skeleton and often involving immediately contiguous bone, i. e. affecting parts of the skull but not the entire skull. It tends to be of long duration and may exist through a long period of life. It commonly has some skull changes and there are reports of instances where the skull changes have produced proptosis of an eye, which is present in this case. The bone may manifest areas of both increased and decreased density and often an elevated alkaline phosphatase blood value is noted. These bone changes fit well into those which our patient shows. Especially helpful is the common association with sexual precocity in females. This also fits into the picture this patient presents.

The third part of the syndrome, the skin pigmentation, may cause some difficulty in explanation. There are several things to consider. Possibly the pigmentation is not always present. Secondly, this patient is Negro and pigmentation changes may not be noticeable. At times the spots are difficult to detect. In this particular case, the pigment may not be readily detectable as such but may be simply blended with the racial pigmentation. The sexual precocity and the multiple skeletal abnormalities fit best together as an Albright's syndrome.

We are now left with the need of an explanation of the features described in the left thoracic cage. Several things are known about this thoracic lesion. This lady has a scoliosis. She has some displacement of the mediastinum to the side opposite the density in the left chest. Several possibilities would certainly come to mind. First, is this tuberculosis with tuberculous pleurisy, thickened pleura, and with some degree of pleural effusion? Against this is the fact that she had been unsuccessfully studied for this possibility as well as for the long duration. Could this be an old empyema? There is no history to go with it and after many years an empyema would not exhibit a thin serous pleural effusion with shift in the mediastinum.

One diagnostic possibility worth entertaining is the well known fact that people with a deformed thoracic cage may develop what is known as scoliotic heart disease and may eventually manifest features of a cor pulmonale and cardiac failure. There are certain aspects of this case that are at least slightly suggestive of heart failure, such as shortness

of breath and on several occasions ankle edema. The characteristic features that you might like to find in generalized congestive failure—the increase in venous pressure and so forth, were not manifest.

Another possibility is a tumor of some sort with production of fluid by metastases or in some benign fashion as for example in a Meigs syndrome due to an ovarian fibroma. It is entirely possible for a benign tumor in the pleural cavity to produce fluid. The chest density was seen as far back as 1950 and may have been present even longer. The thoracic cage lesion existed even longer. This period is too long to suggest any of the common malignant tumors. It certainly immediately excludes bronchogenic carcinoma and to my mind would also exclude a diffuse spreading mesothelioma. It would not exclude the possibility of some benign tumor of the thoracic cage producing both a fibrous reaction in the pleura and fluid, nor would it exclude a localized fibrous type of benign mesothelioma. The latter type of tumor was commented on just a few moments ago and may produce the picture of a rheumatoid type of arthritis, clubbed fingers or even an acute osteoarthropathy. As far as I know there is no definitive association of such a tumor with the Albright's syndrome.

The logical conclusion would be that this lady has an Albright's syndrome and an independent disease in the left thoracic cage which may well be some kind of a benign tumor with a pleural reaction both fibrous and fluid.

Dr. Jeghers' diagnosis

- 1 Polyostotic fibrous dysplasia (Albright's syndrome)
- 2 Benign tumor left chest

PATHOLOGIC FINDINGS

Dr. Zikmund: Thank you, Doctor Jeghers. Doctor Turner, will you go ahead and give us the reports on the two biopsy specimens submitted to you?

Dr. Turner: There were two specimens received in the laboratory. The first consisted of a major portion of a rib which measured 17 cm in length. No abnormality was seen upon gross examination and on microscopic examination only normal bone was revealed. There was no bone lesion present, but the examination was of some value because it indicated that generalized bone disease was not present. The second tissue specimen consisted of a wedge biopsy measuring 2.5 cm in its greatest diameter. The convex surface of this biopsy specimen was covered by a smooth membrane consistent with either pleura or a capsule. The cut surfaces were firm, red, and somewhat gritty. The tissue cut with very firm resistance and gave a gritty sensation as the blade passed through the tissue. Microscopic findings are illustrated in the photomicrograph (fig. 4). This lesion consists essentially of a back-

ground of dense fibrous tissue. You will note that the fibroblasts are quite mature that the nuclei are small and that there is a moderate amount of intercellular eosinophilic material. Embedded in this fibrous matrix are scattered poorly formed bone lamellae of the so called



Figure 4. Photomicrograph of tissue specimen, showing background of dense fibrous tissue, mature fibroblasts and moderate amount of intercellular eosinophilic material (Hematoxylin and eosin stain $\times 200$)

bone fiber type. This bone is very poorly calcified and lacks the usual architectural arrangement of well formed spongy bone. About these spicules are considerable numbers of osteoblasts at frequent intervals and an occasional multinucleated osteoclast.

Pathologic diagnosis

Fibrous dysplasia of thoracic wall

Doctor Zikm nd Thank von Doctor Turner

That concludes the presentation of the case with biopsy tissue diagnosis

Briefly to summarize the main points of what we have given you this is the case of a 36-year old Negro woman who presented herself because of cardiorespiratory symptoms and in whom significant findings included skeletal disease best described as consistent with fibrous dysplasia sexual precocity and the presence of a space occupying lesion in the left hemithorax which on thoracotomy revealed tissue diagnostic of polyostotic fibrous dysplasia You might ask and I shall clear the point now why the bone biopsy specimen revealed normal bone architecture In the x rays as emphasized before the meeting by Doctor Fries the rib that was removed was selected largely to provide adequate exposure of the left pleural cavity It was not one of the ribs reported as showing disease by the x ray Had thoracotomy been feasible at a higher rib level such as the third rib bone microscopy would likewise have revealed fibrous dysplasia

Doct. Plittman: In instances of eosinophilic granuloma involving soft parenchymatous tissue in which healing takes place either after irradiation or spontaneously what is the histologic picture in such instances or has there been any experience along these lines?

Do for T r The reports that I have read on the subsequent histologic examination of treated lesions revealed only a scarring or normal fibrous tissue at the previous site. In contrast to Albright syndrome there is no active proliferation of fibrous tissue. It is simply the remains after healing rather than a proliferative change.

Dr. Pflum: I asked the question purely because at least one investigator, Doctor Snapper, has suggested that possibly monostotic fibrous dysplasia of tibia may sometimes represent spontaneous healing of an eosinophilic granuloma.

D to Z km d, Doctor Turner I should like to ask you a question. What is the significance of the presence of giant cells in this tissue. Are giant cells diagnostic features of fibrous dysplasia?

Do to Turn r The important thing in the evaluation of fibrous dysplasia as far as giant cells are concerned is where they are located. You will notice in this photomicrograph that the giant cells were close to bony picules where normal osteoclasts resorb bone. In the giant cell tumors of bone of course giant cells are scattered throughout the stroma. That's the important differential.

D to Zikm nd Are there any pther questions?

Doct. Flip: We are going to have to treat this woman perhaps in the near future. I wonder if Doctor Jegbers has any therapeutic sugges-

tion to make or if he has none whether the surgeons believe that they can remove a part of this pulmonary tumor for us and perhaps help her out?

Doctor Jeghers I do not think I could make any pertinent suggestions in regard to therapy

Doctor Zikmund I might furnish some brief comment on that. We have as you know considered whether or not this patient eventually will come in with cardiopulmonary failure and just what we might offer her. The Chief of Surgery believed as did we that because this is perhaps the first reported case of an Albright's syndrome with this type of pulmonary complication and therefore with no precedent to serve as a guide that consideration would be given eventually to surgical removal of an adequate amount of the dysplastic tissue in order to restore the mediastinum to its normal position. Certainly with this type of bony fibrous dysplasia perhaps having destroyed most of the lung tissue we could not expect to do more in order to attempt to improve terminal cardiorespiratory failure.

Doctor Hortney I did not hear it mentioned but I wonder if anyone would comment on whether or not these bony lesions are progressive and whether or not there would be any chance of cerebral manifestations at some future date Also no one mentioned whether the enlarged liver could be secondary to the lung problem

Doctor Zikmund Doctor Carr perhaps you might like to comment on the first part of that question

Doctor Coe: Actually the lesions in the bone in these cases of arrested development follow such a bizarre pattern that it is difficult to evaluate whether they will or will not grow. They generally grow with the bone as the child grows and they are space-occupying. They are not progressive from the standpoint of new lesions occurring. Most of them that are there have been there all along although they may grow to size somewhat. The picture here in the skull and the ribs leaves us somewhat at a loss because we do not often see them located in just these locations. From a surgical standpoint they may give us trouble in the long bones with possibilities of pathologic fractures and disturbances near the joints. I think that it is possible in a situation of this kind that a stimulus might exist whereby more fibroblasts would be proliferating and laying down this fibrous tissue. It would seem to me that this might have been occurring in this lung in which case I wonder if the radiologist would have anything to suggest in the way of arresting proliferation of the fibroblastic tissue assuming it were shown that such proliferation was occurring and that the lesion was actually expanding its size.

Do for Fries: From the x ray studies there is no apparent change in this lesion over a period of four years. The growth therefore if any,

has been minimal. Such lesions have been treated with x ray for the relief of pain and at times this is effective but x ray therapy does not apparently control the growth of the bony lesions of fibrous dysplasia. Some cases of fibrous dysplasia have been treated with cortisone especially when pain is present in an attempt to slow down the fibroblastic growth. These have been few in number and long term follow ups are not available. In this particular case it would not be indicated because recent growth of the bony lesion and pain have not occurred. The cerebral manifestations in this patient may be explained similarly to those associated with Paget's disease where the inner table of bone encroaches on the cranial contents and the underlying brain undergoes atrophy. In fibrous dysplasia there is a known relationship between extensive frontal bone involvement and psychosis.

Discussion: The liver was noted to have been abnormally enlarged but not tender. The Rondo-Pasteur sign was negative. The question of cor pulmonale obviously would be a matter of how much clinical progression there may be in the present mediastinal problem with resultant greater load on the heart. I think it is really an unpredictable situation whether or not her death will eventually be cardiac or some other complication of her disease perhaps intracranial. I would say that it is a very real possibility that she will eventually die a cardiac death most likely from cor pulmonale. Her neck veins are not distended. Certainly with the cardiac silhouette so badly obscured and the electrocardiogram not showing significant changes present clinical findings at this time are inadequate for diagnosis of cor pulmonale although obviously that seems to be the direction in which her problem leans and which is accounting for symptoms of effort induced shortness of breath and some of the other symptoms of the cardiorespiratory system already stated.

The case included in this report to be published in the American Journal of Roentgenology Radiology and Nuclear Medicine by J. H. W. F. M. D. included Fibrous dysplasia of the skull described by Crissley.

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The general uses of antibiotics in military medicine are similar to the general civilian uses. On the battlefield the use of antibiotics does not preclude minimize or modify the accepted surgical principles of wound toilet, debridement and secondary closure.

—GEORGE E. ARMSTRONG, Major, General Medical Service, USA
 and Lieutenant and Staff
 p. 6 First Quarter 1954

Perforated Gastric Ulcer and Gastrocolic Fistula Associated With Prolonged Cortisone Therapy

KENNETH P. BACHMAN *Lieutenant Commander (MC) USN*

CHARLES E. ROGERS *Lieutenant (MC) USN*

WITH the advent of the widespread use of cortisone and corticotropin (ACTH) in therapy, it was not long before the possible side effects of these powerful drugs became manifest. One of these, peptic ulceration and its complications, has prompted this report.

Numerous clinical observations suggest a relationship between unusual amounts of circulating adrenal cortical hormones or corticotropins and peptic ulcerations. Repeated warnings against the use of these drugs in patients presenting a history of peptic ulcer are found in the literature.^{1,2,3} Complications such as massive hemorrhage⁴ and perforation^{4,5} have been reported. A careful search of the literature has, however, failed to reveal any case in which silent, spontaneous perforation of a gastric ulcer occurred with the formation of a gastrocolic fistula. Such a case is here presented.

CASE REPORT

A 33 year old woman had been well until she experienced the onset of severe psoriasis involving about 50 percent of her skin surface about nine years prior to admission to this hospital. Within three years after the onset of the psoriasis almost all of the skin was involved and arthritic changes were evident in the joints of both hands and feet. Two years after the onset of the psoriatic arthritis, the joint changes had become severe enough to render her a semi invalid. She was first hospitalized in January 1951. From 1951 to the last admission she was generally ambulatory, although her arthritis and skin condition gave no evidence of substantial remission.

The dates of hospitalization as related to cortisone and ACTH therapy are summarized in table 1. It should be noted that ACTH was administered only on two occasions, the first time in 1951 and the second during the preoperative and postoperative periods. Also of importance is the fact that during the 12 months prior to

From U. S. Naval Hospital, St. Alban, N. Y. Comdr. Bachman is now assigned to U. S. Naval Administrative Unit, L. B. e. Las Vegas, Nev.

her death she received a minimum of 50 mg of cortisone daily and during the last six months of life 100 mg or more

TABLE I

Adm d te	Cort	ACTH
1 p t t 12-51 to 4-3-51	200 mg rally d ily gradually d cr t g t 25 mg da ly	100 mg da ly f 27 d y
O r p t t 4-3-51 to 6-18-51	25 mg lly da ly	N
1-p t t 6-18-51 to 8-18-51	500 mg serum s ur l ly da ly f 21 d y	N o
O r p t t 8-18-51 to 2-4-53	N	
In-pat t 2-4-53 to 2-14-53	100 mg rally d ly	No
O r p tie t 2-14-53 to 8-5-53	50 mg lly d ily	N
In-p t t 8-5-53 to 9-2-53	100 r rally da ly	No
O r p tie t 9-22-53 to 1-29-54	100 mg rally d ly	No
1-p tie t 1-29-54 to 2-18-54	V tabl — rag g 100 mg d ily	Dur g pre- d po t operat v ph

In January 1954 she was admitted to this hospital complaining of mild abdominal cramps of one week's duration associated with severe diarrhea. The diarrhea was related to the intake of foods and ingested items appeared in the stool as early as 20 minutes after eating. On rare occasions she had experienced nausea and vomiting with this attack. There was no previous history of gastrointestinal disease. The diagnosis of a gastrocolic fistula was considered and later established by gastrointestinal roentgenographic series (figs 1 and 2). The fistula appeared to be located along the greater curvature and to empty into the mid transverse colon. Although the patient was not a good operative risk, it was obvious that surgical intervention was necessary. She was therefore given intravenous infusions of serum albumin, fructose solutions, and electrolytes in an effort to prepare her for surgery.

Seven days prior to operation a sudden drop in blood pressure occurred and it was necessary to add small amounts of levarterenol bitartrate (levophed) to the solutions being administered intravenously to maintain the systolic pressure at 100 mm Hg.

Cortisone was increased to 100 mg by mouth and 100 mg intramuscularly and in 24 hours the patient's blood pressure stabilized. On each of the two days before operation 200 mg of cortisone intramuscularly and 40 units of ACTH intravenously were given.



Figure 1 Roentgenogram demonstrating the fistulous tract between the stomach and the colon

At laparotomy the gastrocolic fistula was easily mobilized because there was almost no fibrous tissue reaction in either the bowel wall or the omentum. The repair was effected by closing the stomach and colon with transverse sutures using two layers of No. 0000 silk.

During the operation and through the postoperative period until the patient's death her blood pressure was maintained above 100 mm Hg systolic only by the addition of levarterenol bitartrate to intravenous infusions. Blood volume and red cell mass deficit had been corrected prior to operation and postoperative determinations were found to be within normal limits. The

patient responded from anesthesia but never returned to a responsive speaking state. She died suddenly after lapsing into shock and coma.



Figure 2. Roentgenogram showing the defect in the greater curvature of the stomach.

The anatomic diagnoses at autopsy were (1) bilateral adrenal atrophy (2) generalized severe chronic dermatitis (3) status post repair of gastroduodenal fistula with intact suture lines (4) benign ulcer lesser curvature of stomach (5) bilateral thromboses of the distal inferior radicals of the pulmonary arteries with multiple bilateral pulmonary infarcts (6) bronchopneumonia and (7) marked fatty degeneration of the liver.

COMMENT

This case illustrates two of the more serious complications that may result from prolonged cortisone therapy, namely peptic ulceration and adrenal atrophy. The latter, as has been pointed out by Fraser and associates and Bekke, may be associated with irreversible shock.

It may be further noted that this patient developed two gastric ulcers, one of which perforated and resulted in a gastrocolic fistula, apparently without any subjective signs or symptoms of gastrointestinal disease. Her complaints were evidenced only after a gastrocolic fistula had occurred with resultant severe diarrhea and mild gastrointestinal distress.

Possibly the euphoria associated with cortisone therapy played a part in her sense of well being.

SUMMARY

During prolonged cortisone therapy a patient with psoriasis and psoriatic arthritis developed two gastric ulcerations. One of the ulcers perforated resulting in a gastrocolic fistula. The latter complication was made evident only after the sudden appearance of severe diarrhea without any previous signs or symptoms of gastrointestinal disease.

In spite of cortisone, ACTH, levarterenol bitartrate, and adjunctive therapy, death occurred postoperatively in irreversible shock. Postmortem examination revealed bilateral adrenal atrophy.

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DECREASE IN MORTALITY OF RHEUMATIC FEVER

The mortality from rheumatic fever which has been decreasing for many years declined even more rapidly in the past decade. This recent improvement has been due in part to general betterment in environmental and living conditions and more particularly to the greater control over streptococcal infections with sulfa drugs, penicillin and other antibiotics. The new therapy has been useful in preventing both initial and recurrent attacks of rheumatic fever.

Intraoral Open Reduction of Fractured Edentulous Mandible

ROBERT BONDA *Capt in, USAF (DC)*

ONE OF the prime concerns in the treatment of osseous fractures is satisfactory immobilization. Immobilization of a fractured mandible in an edentulous patient sufficient to promote good bony union may not be easily established. In some cases as in the one to be presented here additional injuries complicate the treatment plan. Cranial injuries which in many cases are associated with facial trauma not only limit the selection of anesthetic and analgesic agents but also increase the operative risk. Multiplicity of facial injuries adds to the complexity of ascertaining the treatment of choice in the individual case.

When it has been decided that an open reduction is indicated for a fracture of an edentulous mandible, the intraoral approach should be given consideration. It is advocated that this approach be used whenever possible. In many cases it offers decided advantages over the extraoral approach. The factors to be considered in deciding the mode of access are (1) facial scarring (2) damage to facial blood vessels and motor nerves (3) possibility of increasing contamination at the fracture site (4) location and nature of fracture (5) ease of accessibility to fracture site, and (6) additional existing facial injuries.

Transosseous wiring in itself is not advocated as a sole means of immobilization. It will retain the reduced segments in position but additional support is required. Some form of intermaxillary fixation must be devised to ensure against displacement. This problem is minimized if a partial maxillary dentition exists; however, it becomes a major consideration in the edentulous patient. In the case to follow not only was the patient edentulous but his dentures the only registration we might have had of his normal intermaxillary relationship and mandibular contour were destroyed in the accident that caused his injuries. In such an instance the relationship must be established anew and maintained.

The following review is presented because it is believed that many of the factors that complicate mandibular fractures exist in this case and because it demonstrates the application of the intraoral approach to an open reduction of a fracture involving an edentulous mandible.

CASE REPORT

On 19 September 1953, the automobile in which a 24 year old airman was a passenger was involved in a head on collision with a truck. The patient was removed from the wreckage in an unconscious state and taken to the nearest civilian hospital. His lacerations were sutured and he was transferred to this hospital by ambulance three hours following the accident.

Physical examination at the time of admission disclosed a conscious, well oriented patient complaining of pain about the face and head. He appeared to have suffered a moderately severe concussion of the brain. The subsequent retrograde amnesia that was present concerned the five hours previous to and three hours following the accident. Facial asymmetry was evident (fig 1). There was no respiratory obstruction. Examination of the left external auditory meatus offered evidence of blood and possible cerebrospinal fluid. Pupils reacted normally to light and accommodation. Blood pressure was 130/80 mm Hg, pulse, 75, and respirations, 20.

With the exception of abrasions of the knee, injuries were confined to the head and face. Clinical examination, substantiated by radiographic studies, established the following diagnoses: (1) A compound, comminuted, depressed fracture of the right body of the mandible causing marked facial deformity. There was considerable comminution with a large triangular fragment of bone severed from the main segments and displaced inferiorly and laterally (figs 2 and 3). (2) A fractured, disarticulated left condyle of the mandible which was displaced forward and medially. (3) A fracture of the nasal bones without deformity. (4) Right periorbital ecchymosis. (5) Lacerations of the face and mucous membranes of the mouth. In addition to the above listed facial injuries were a moderately severe concussion of the brain, and a possible basilar skull fracture.

Intraoral examination revealed an edentulous mouth. The fracture of the right body of the mandible was compounded into the oral cavity causing a laceration of the mucous membrane. The posterior segment was depressed medially and locked in a lingual relationship to the anterior segment. There was marked limitation of mandibular movement. Although the patient could with some difficulty close his lips, he could not approximate his mandible

to his maxilla. Impressions taken at a later date were used to obtain study models which clearly showed the discrepancy in the contour of the mandibular ridge.

The patient was kept at bed rest. On the sixth day, under local anesthesia, the fracture site of the right body of the mandible was exposed by an intraoral approach and débrided. Numerous detached chips of bone were removed. The large triangular frag-

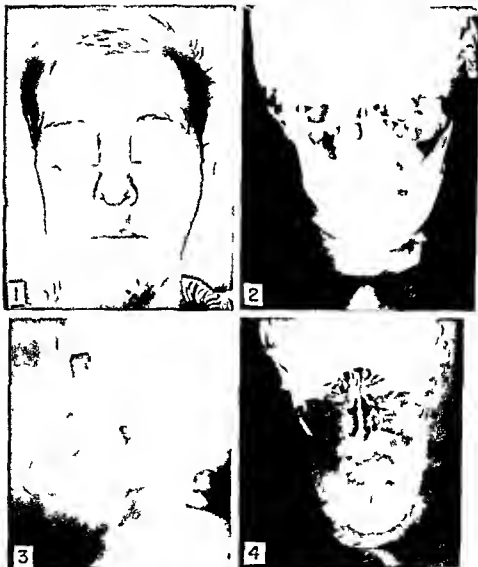


Figure 1. Appearance of the patient before treatment. Facial asymmetry is evident. Figure 2. Postoperative view of the skull and mandible after treatment. Figure 3. Lateral view of the mandible demonstrating the fracture site and displacement. Figure 4. Postoperative view of the skull and mandible after treatment.

ment of bone which was reported on the radiographic examination was attached to the periosteum and therefore retained. Using a No. 41 bone bur and an electric engine, a hole was made through the body of the mandible on each side of the fracture site. The displaced segments were favorably positioned and maintained in their proper alignment by the insertion of a 25 gage, stainless steel interosseous wire. The mucous membrane was approximated and sutured with No. 000 catgut.

Immediately following the closure, an impression of the mandible was taken with hydrocolloid, a stone model was made and an acrylic splint constructed with self-curing acrylic. While the splint was being prepared, circumferential wires were placed around the mandible. A curved 20 gage, 2 1/2 inch Luer needle was inserted into the floor of the mouth closely approximating the lingual cortical plate of the mandible, and continued until the point of the needle pierced the skin beneath the body of the mandible. The wire was inserted through the needle and the needle was then removed. This process was repeated on the buccal aspect of the mandible so that the wire encircled the mandible with both free ends remaining in the mouth. One wire was positioned distal to the fracture site around the right body, one around the left body, and one around the symphysis menti. As soon as the acrylic splint was delivered to the operating room, it was prepared for insertion into the mouth. The splint was then positioned and firmly attached to the mandible by the three circumferential wires. The impinged soft tissues were freed to avoid dimpling of the skin and underlying tissues as the wire was being tightened intraorally. This was accomplished by following the wire with a No. 11 scalpel blade up to the inferior border of the mandible. The procedure was then completed and the patient returned to his bed. No attempt was made to reduce the fracture of the left condyle of the mandible (figs. 4 and 5).

The problem was then to stabilize the mandible in this edentulous patient. An impression of the maxilla was obtained and a wax bite block made. After attempting to establish reasonable vertical and centric positions, the wax block was processed in acrylic. The anterior portion of the block was relieved to facilitate feedings. Two brass rods were placed on the buccal aspect of the maxillary acrylic block so that they would protrude from the mouth, and in a position which permitted closure of the lips. A plaster headband was fashioned and so constructed that brass rods attached to it would stabilize the maxillary denture. The maxillary bite block and mandibular splint were sealed together with self-curing acrylic and the splints secured to the headband. The fractured mandible was then immobilized (figs. 6 and 7).

The patient was maintained in this position for a period of six weeks. His facial lacerations healed satisfactorily and the periorbital ecchymosis subsided. There was little displacement of the nasal bones making reduction unnecessary.

During his convalescence the patient complained of nausea and severe constant headaches in the occipital and nuchal regions. Neurologic consultation and examination including an electroencephalogram taken following the removal of the plaster headband and attachments on 9 November suggested a postcon-



Fig. 5. L. t. l. blq. w. f. the mand. bl. d. m. t. t. g. the t. u. th. the mand. b. la. pl. nt. po. it. o. Fig. 6. Pat. nt. th. pla. t. he. dband. nd. att. hmc. t. Fig. 7. Po. t. oa. t. or. w. f. the. k. ll. bo. g. the. pla. t. h. dband. It. hm. t. and. pl. t.

cussion syndrome Basilar skull fracture was not demonstrated radiographically On 17 November, after 60 days of hospital confinement, he was granted a convalescent leave The intraoral splint had been removed along with the headband and attachments on 9 November, following six weeks of immobilization His head aches had lessened and the facial injuries had healed without complications There was no difficulty in mandibular movement and, although the fractured condyle remained disarticulated from the fossa, the joint functioned without limitation



Fig ures 9 and 10 Appearance of the patient after completion of treatment

The patient was readmitted to the hospital on 10 December His condition was satisfactory and the previous neurologic complaints no longer existed Radiographic studies demonstrated bony healing at the sites of fracture Under local anesthesia (15 December), an incision was made along the alveolar ridge on the right body of the mandible The mucous membrane was reflected and the interosseous wire was removed The mandible was tested by exerting pressure at the symphysis and the angle, and no movement at the sites of fracture could be demonstrated The mucosa was sutured with No 000 silk Three days afterward, the sutures were removed and he was discharged from the hospital

The patient was observed and treated in the outpatient clinic for four months following his discharge During that time he was referred to the prosthetic department for dentures In March, treatment was considered completed and the patient was allowed to proceed to his next military assignment (figs 8, 9, and 10)

SUMMARY AND CONCLUSIONS

In many cases involving a fracture of the mandible an open reduction is indicated. It is suggested that in the patient with an edentulous mandible the surgeon first consider an intraoral approach to the fracture site. Some of the factors to be considered in deciding on the mode of access are facial scarring, damage to facial blood vessels and motor nerves, possibility of increasing contamination at the fracture site, location and nature of the fracture, ease of accessibility to fracture site and additional facial injuries.

It is my belief that in the case presented here the intraoral approach was the treatment of choice. Treatment of the patient was complicated by the fact that he had sustained additional injuries.

Although there are several other accepted methods of treatment that may have produced equally desirable results, it is proposed that the method here described be considered among the satisfactory ones.

FUNCTIONAL MOUTH PROTECTORS

In view of the fact that functional mouth protectors have been developed for some time, it is surprising that they are not more popular among amateur athletes. One of the reasons is the failure of the dental profession to educate the laity concerning the absolute necessity of the use of mouth protectors in contact sports. Another reason is that the techniques used in their fabrication have made the cost prohibitive in the majority of cases. A functional mouth protector not only lends protection to the oral cavity and associated structures but also minimizes the force of blows transmitted to the brain—blows which might lead to unconsciousness, concussion with permanent or cumulative injury to the brain and in extreme cases even to death.

—GEORGE WATTS, D.D.S.

Journal of American Dental Association
p. 8 July 1954

A New Method for Blood Carbon Monoxide Determinations

JAMES N. WAGGONER *Lieutenant (MC) USNR*
MARION L. PERNELL *B. S.*

AS PART of an investigation into aviation hazards conducted at this naval air station, we were interested in measuring blood carbon monoxide (CO) levels. The major problem encountered was that of performing any sizable number of blood CO determinations,* and a definite need was seen to exist for some method whereby large numbers of blood CO analyses could be readily and accurately performed. Numerous methods previously devised have met with varying degrees of success, but none has obtained the desired degree of accuracy. Probably the favorite method of determination used today, the volumetric method of Van Slyke, gives results which are considered to be within one percent of the true values. This test takes 20 minutes, however, and only one determination can be performed at a time.

We believe that our method described below offers the best means yet proposed for performing blood CO determinations simply, inexpensively, rapidly, and with a reasonable degree of accuracy.

The series reported here covers 97 blood CO determinations for which values have been determined by this new method and checked for accuracy against the Van Slyke volumetric method.

The results of these comparisons reveal that the answer obtained from the new method is within two percent of the value obtained by the Van Slyke method. The test takes only 10 minutes to complete and several determinations can be run simultaneously. We have performed six determinations together, and have invariably received the results within 25 minutes.

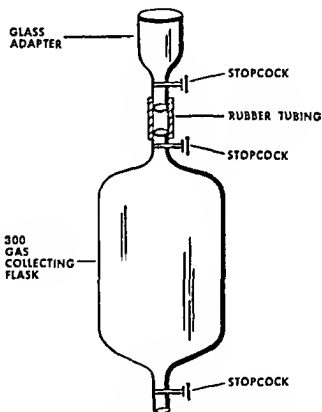
The cost of the necessary equipment and reagents is well under \$10 for 100 determinations. This compares favorably with the \$150 listed price for the Van Slyke equipment alone, and

*Allgemeine f. CO air d. t. m. n. a. t. i. o. n. s. w. r. m. d. w. t. h. by us of the carbon monoxide found in the blood of the Naval Air Station, San Diego, Calif. Dr. Wagoner, now at Medical Department, Unit 1 Air L. Chicago Ill.

the \$1 250 purchase price of such instruments as the spectrophotometer

METHOD

The reagents used are 0 3 gram sapon n 0 8 gram potassium ferricyanide 0 4 cc lactic acid and 0 3 cc caprylic alcohol These materials are put into a clean dry beaker with distilled water in sufficient quantity to make 100 cc This solution is to be made up on the day during which determinations are to be made



*Figur 1 Gas coll ct g flask for blood CO d term nat ons
u th gl adapter pl ce*

- 1 All air is evacuated from a 300 cc gas sampling flask with stopcocks
- 2 With a glass adapter arranged on the flask as indicated in figure 1 1 cc of whole blood (to which sodium citrate was added as an anticoagulant at the time the blood was drawn) is placed in the adapter
- 3 Five cubic centimeters of the above-described solution is added to the adapter

4 With the bottom stopcock of the flask closed the stopcocks on the top of the flask and on the adapter are opened thus allowing the blood and solution to be drawn into the flask

5 The top stopcock is closed and the adapter is removed

6 The flask is shaken for five minutes

7 A carbon monoxide indicating tube for the detection of CO in air is attached to one end of the flask

TABLE 1 *Conversion table for carbon monoxide determinations by the method described in this report*

Reading obtained via CO-indicating tubes	Theoretic estimation of blood CO in percent of saturation
0 00	0 0
0 001	1 5
0 002	3 0
0 0025	3 8
0 004	6 0
0 005	7 5
0 008	12 0
0 01	15 0
0 02	30 0
0 04	60 0
0 05	75 0
0 066	100 0

8 Both stopcocks on the collecting flask are opened. A rubber bulb accompanying each purchase of a CO indicating tube is attached to the tube and collapsed. A finger placed over the air outlet of the rubber bulb will allow the bulb to slowly fill thus drawing air from the flask through the CO indicating tube.

9 In the center of the indicating tube is a small yellow area which on exposure to various concentrations of CO gas changes shades through green to blue. Because any CO in the blood was liberated into gas via the above method the air drawn through the indicating tube will change the color of the test area in the tube directly in proportion to the concentration of CO gas. A color chart is provided with each set of CO indicating tubes purchased. The color of the tube is matched with the appropriate color on the colorimetric chart. The corresponding figure listed below each color on the chart is thus obtained.

10 This figure is converted to the final answer of percentage saturation of CO in the blood by use of the simple conversion table given above (table 1) These figures were obtained by calculating the amount of blood present and the dilution factor of CO liberated from the blood into a flask containing 300 cc of air

SUMMARY

A new method for determining blood carbon monoxide levels described here is believed to be quicker more accurate, and less expensive than methods now in use It is hoped that if such a method is generally adopted its advantages will stimulate an increase in the number of blood CO determinations wherever personnel are exposed to the products of combustion or oxidation Thus a greater degree of public safety may be attained

TO TELL OR NOT TO TELL

In all my experience no patient has ever asked me afterward whether the tumor was malignant or not Once in Dr Cushing's clinic when I was first getting experience in these things Dr Cushing had a patient who had been on the Yale football team when Cushing was there They were good friends Those were in the days of the flying wedge when playing football really took courage of no small order This man was a star football player in those days He was a big powerful driving sort of man who had been a big executive in a manufacturing plant He asked Dr Cushing Harvey I want to know what's the matter with me? Dr Cushing told him that he had a brain tumor and that he had to be operated on He said All right After the operation he said to Dr Cushing in my presence How long do I have to live? I have to arrange my affairs I have important commitments and I must know how to take care of them Cushing hesitated a moment and told him Well from six months to a year The man was sitting in a chair at the time he turned white as my coat and slid right down out of the chair and on the floor in a complete faint We had to pick him up to get him back to bed I remembered that experience and I decided that I would always lie to patients if they asked me

—PERCIVAL BAILEY M D

GP p 81 Sept 1954

PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army, Navy and Air Force have recently received temporary promotions to the grade indicated

Medical Corps

Wallace E. Allen Capt. USN	Everett P. Kirch Capt. USN
Thomas E. Atkinson Jr. Comdr. USN	Gene N. Lam May USA
Richard B. Austin Lt. Col. USA	John B. McGee Capt. USN
Lewrence E. Banks Comdr. USN	Robert H. Mersbo Capt. USN
Norman L. Barr Capt. USN	Donald T. Miller Capt. USN
Edward L. Beckman Comdr. USN	Nicholas M. Muss Capt. USN
Dwight W. Boone Capt. USN	Charles B. Newton Comdr. USN
Ernest M. Brailly Jr. Lt. Col. USA	Emmett F. Norwood Capt. USN
Clement D. Burroughs Capt. USN	John R. Palmer Jr. Comdr. USN
Robert O. Canaday Jr. Capt. USN	Jack W. Pomeroy Lt. Col. USA
Malcolm J. Capron Jr. Comdr. USN	William H. Powell Jr. Maj. Gen. USAF
Frank B. Clare Comdr. USN	Lester J. Pope Capt. USN
Merrill Hall Cohen Capt. USN	Frederic T. Rafferty May USA
Morris S. Curtis Capt. USN	Reginald R. Rambo Capt. USN
Edward L. DeWillo Comdr. USN	Jess F. Richardson, Capt. USN
Douglas D. Flickinger Brig. Gen. USAF	William C. Robinson Comdr. USN
Richard L. Funn Capt. USN	John S. Shaver Capt. USN
Shirley A. Fuhlsberg Capt. USN	Edward F. Silke Capt. USN
James A. Grind II Capt. USN	Robert A. Stalter Comdr. USN
Charles S. Hecall Jr. Capt. US	John D. Walters Capt. USN
Lew L. Hyatt Capt. USN	Dale B. Watkins Comdr. USN
Burns O. Jannil Capt. USN	Frederick E. Wetzell Comdr. USN
Robert S. Kibler Comdr. USN	Norman B. Yonish May USA

Dental Corps

Conrad H. Brundt Capt. USN	Dwight R. M. Donald Comdr. USN
Rosolno J. Currer Comdr. USN	Donald T. Marquis Comdr. USN
Ronald C. Doy Capt. USN	Edward W. Moo Comdr. US
Stanley W. E. Capt. USN	James T. Mueller Capt. USN
Francis W. Hughes Comdr. USN	William D. Owen Capt. USN
Godwin M. Humick Capt. USA	John V. Riley Comdr. USN
Joseph S. Hurks Comdr. USN	Dale B. Ridgely Brig. Gen. USA
Edmund E. Jones Capt. USN	Charles E. Rudolph Jr. Comdr. USN
Anthony K. Kase Comdr. USN	Ralph H. Stowell Comdr. USN
Wynne F. Larrabee Capt. USA	Myron G. Turner Capt. USN

Veterinary Corps

Everett H. Atkins Lt. Col. USA	Wesley A. Climen Jr. Lt. Col. USA
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Medical Service Corps

Edward J. Adams Jr. Lt. Col. USA	Paul F. Austin Lt. Col. USA
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This new feature will appear monthly. Listing will be limited to promotions published in the official gazette dated through September 1, 1954.—Editor

Medical Service Corps—Continued

Thom E B k Lt Col USA
 Ge ge A Bar on Comdr USN
 H be F B rden Lt Col USA
 Board F Duw l Comdr USN
 Fl yd C Egg Lt Col USA
 Leo P E ma Comdr USN
 Thom M Fl yd, J Comdr USN
 Cona d C. F wk Comdr USN
 R bert L H nry Comdr USN
 F y O Hunts ng Capt. USN
 G g A. L J h Comd USN
 J hn E K ll y Comdr USN
 P ul R Kent Comdr USN
 Fed J L w J Comdr USN

H ry H L nd Comdr USN
 J hn F Lod to Lt Col USA
 Arthur R M Alp ne Lt C L USA
 F nk J M ch ll Comd USN
 H rma M l h Comdr USN
 Ern K Mo g Lt Col USA
 Eng ne J Mull ghy Lt Col USA
 Arno B N hbel k Lt. Col USA
 Thoma E Sh J Comdr USN
 Royc K Sk w Comdr USN
 Georg S S Comdr USN
 Ralph L V Comdr USN
 Erw W Wh Comdr USN
 W y W Wdlgr be Comdr USN

Nurse Corps

Mar ha O Ay ck Lt Comdr USN
 An B Lt. Comdr USN
 Alma C B Hasty Lt Comdr USN
 Agatha A B ra uska 1st Lt USA
 Th lma R. Ba Lt. Comdr USN
 Eth l L Ba Lt Comdr USN
 L cy R Benj m Lt. Comdr USN
 A na J B na Lt Comdr USN
 M ga t R B ty Lt. Comdr USN
 Bard M Bl k Lt Comdr USN
 Rita N Brochr p Lt Comdr USN
 Alb ta S Burk Comdr USN
 Gl dy V Bus y Lt. Comdr USN
 H l E Cl k Lt. Comdr USN
 Rita D Cla k Lt. Comdr USN
 R th M Cobe Lt Comd USN
 E E Co y Lt Comdr USN
 Mary E. Cren b w Lt Comdr USN
 C lsa M. Da Lt Comdr USN
 Carol L Dunni g, Lt. Comdr USN
 Gl dy E Dvorak Comdr USN
 Ann M Eg Lt. Comdr USN
 h rma A. Ell gs Lt. Comdr USN
 H l S. E ik Lt Comdr USN
 E lyn L Er k Lt Comdr USN
 Thelma L F Lt. Comdr USN
 Ro A Fl naga Lt. Comdr USN
 Dorothy M G l Lt. Comdr USN
 E ly D Gl y Lt Comdr USN
 M ry G sk Lt. Comdr USN
 Ma y C. Grim Comdr USN
 Ma ga L H l y Comdr USN
 El M. H gto Lt. Comdr USN
 Mary A. Harr gton, Lt. Comdr USN
 Edna P H H l Lt. Comdr USN

M A K owl Lt. Comdr USN
 Cl L L mpp Comdr USN
 Mary M L gt Lt Comdr USN
 R H. La g Lt Comd USN
 L ara B L bma Lt. Comdr USN
 Fra L L d Lt Comdr USN
 N y C. L w Lt. Comdr USN
 El beth L Mll Lt. Comdr USN
 L all H. Mll ed Lt. Comdr USN
 Eva M Mlak l Lt. Comdr USN
 G urod H N l Comdr USN
 M ga t A N war Lt. Comdr USN
 El zabeth O B Lt. Comdr USN
 L w B Ol Lt. Comdr USN
 M P ul er Lt. Comdr USN
 Fan F P Lt Comdr USN
 H l M Rboud Lt. Comdr USN
 Julia M Sagaw Lt. Comdr USN
 H l S mo k Lt Comdr USN
 L ur M Sa d Lt Comdr USN
 El be b B S udl Lt. Comdr USN
 Ago G Shur Lt. Comdr USN
 Cath I Sm b Lt Comdr USN
 Virgna F Sp g Lt. Comdr USN
 L na Sea Lt. Comdr USN
 Lillia S wa t Lt. Comdr USN
 N ma V S kl Lt. Comdr USN
 Edna L T w d Lt. Comdr USN
 V l ra C. V ubel Lt. Comdr USN
 Marj E V aStein Lt. Comdr USN
 N ncy I W ll Lt. Comd USN
 Kathy E. William Lt. Comdr USN
 Don A Wilso Lt. Comdr USN
 Mary L W llgeng Lt. Comd USN
 Gw Woodall Lt. Comdr USN

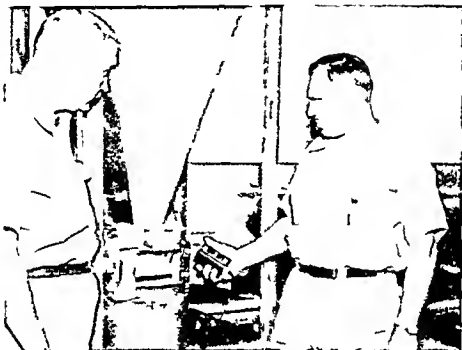
Women s Medical Specialist Corps

Jon A Barn Capt. USA
 H Hiram Capt. USA

Eleano A. L Capt. USA
 Julia A N al Capt. USA

AIR FORCE BASE IN PUERTO RICO IS FIRST TO USE FLUORIDATION OF DRINKING WATER

Fluoridation of drinking water at Ramey Air Force Base Puerto Rico was initiated on 28 September 1954 largely through the efforts of Colonel Carlos F. Schuessler USAF (DC) base dental surgeon. Ramey is the first Air Force installation authorized to add fluorides to its water supply.



Brigadier General Alfred F. Kalberer USAF right presses the control that initiates fluoridation at Ramey Air Force Base Puerto Rico which he commands. The program was inaugurated by Colonel Carlos F. Schuessler USAF (DC) left base dental surgeon.

Following a survey of the 2 500 children at the air base in September 1952 which revealed a higher incidence of dental caries than the average in the United States action was initiated by Colonel Schuessler to obtain authorization for fluoridation. The initial installation of fluoridation equipment was accomplished for about \$3 000 and the yearly maintenance cost is expected to be \$200.

Recent research investigations have shown that decay of teeth in the youngest age groups can be reduced by drinking water to which fluorides have been added. Col. Schuessler stated: "It is expected that continuing research and education will encourage civic agencies to recognize the importance of fluoridation. This will aid military bases in obtaining the necessary equipment and fluorides for treating their water supply."

Medicine, The Learning Profession

The Hippocratic Oath reminds us to band on precepts lectures and all other learning to my sons to those of my maeter and to those pupils duly apprenticed and sworn "

The tradition of teaching has always been inherent in the practice of medicine and today almost every physician does some "teaching" be it advice to an intern seeing his private patient or the more formal medical school lecture. In essence all professional discussion between physicians is a mutual learning and teaching and this self propagation of knowledge is the fundamental basis of the rapid growth and development of modern medicine.

A characteristically American contribution to the technica of medical education is the familiar CPC. These exercises in diagnostic acumen were founded by Richard Cabot at Harvard about 50 years ago. From clinical therapeutic case discussions they developed into the present-day valuable correlation of clinical laboratory and pathologic knowledge.

Here is the answer to the cry that laboratory men are drifting away from the bedside clinician. Here in proper form is brought the combined experience of all variants of the biosciences. When the clinicopathologic conference is not a trick perpetrated on the hapless clinician by the omniscient pathologist but rather a challenging clinical problem solved by the correlation of laboratory and necropsy observations the "Cabot Clinics" are without equal as teaching experiences.

With this issue the *U S Armed Forces Medical Journal* will present a CPC each month as held in an Army Navy or Air Force Hospital. We invite your attention to these examples of the application of the best in current medical thinking brought to bear on our ultimate goal—the diagnosis and treatment of the patient.

Medicine to produce health has to examine disease

—PLUTARCH

The more we study the more we discover of our ignorance

—SHELLEY

A MESSAGE FROM THE A M A

Some of the results of the most recent opinion survey conducted by the Council on National Defense of the American Medical Association among physicians released from active military duty appeared in the December issue of the *Journal*. The remainder are summarized here. Of the 1,948 opinion questionnaires sent out during the six months covered by the survey, 1,600 were completed and returned to the Council.

Reserve status Most physicians (1,037) indicated they retained a reserve commission. The percentage of retentions was highest in the Navy, lowest in the Army.

Distribution by rank at time of discharge The majority (62.6 percent) of physicians held the rank of first lieutenant or lieutenant junior grade. 33.6 percent held the rank of captain or lieutenant senior grade, and 3.8 percent held the rank of major or lieutenant commander or higher.

In a breakdown by branch of service, the Navy had the largest percentage of officers in the lowest rank, showing 90 percent as lieutenants junior grade, 7.7 percent as lieutenants senior grade, and less than three percent as lieutenant commanders or higher. In the Army, 56 percent were first lieutenants, 37.3 percent were captains, and 6.7 percent were majors or higher. In the Air Force, 40.6 percent were first lieutenants, 57 percent were captains, and 2.4 percent were majors or higher.

Government paid medical education A total of 1,244 indicated they had received educational assistance from the Federal Government. The Navy V-12 program accounted for 569 of these. 540 participated in the Army Specialized Training Program, 124 received training under the G-1 Bill through the Veterans Administration, and a few listed a combination of various programs.

Training received in service Of those replying to this question, 465 who had served in the Army, 186 in the Air Force, and 166 in the Navy stated that they had received additional training or experience in service schools. The majority of Army officers mentioned the Basic Course Medical Field Service School. Air Force and Navy officers indicated the School of Aviation Medicine.

Evaluation of medical military training The majority of the 1,292 answering this question believed that no important feature of military medicine had been omitted. Basic orientation and indoctrination was stated by 119 to be inadequate, however, and 73 thought that more in-

struction in military customs administration regulation et ceteta was desirable. A small number listed several other areas of insufficient training.

Evaluation of assignment. A large majority of the physicians (76.5 percent in the Army, 77.3 percent in the Navy, and 83.3 percent in the Air Force) thought they were properly assigned. In addition, 69.8 percent in the Army, 71.9 percent in the Navy, and 73.7 percent in the Air Force expressed satisfaction with their assignments.

Assignments. One of the questions was designed to determine the amount of time spent by physicians on various types of assignments. Because of incomplete returns, only the amount of time spent on the treatment of military personnel and their dependents in the United States and overseas is reported. Replies showed that at domestic duty stations, 38.44 percent of time was spent on military personnel and 28.67 percent on their dependents; overseas, 27.79 percent of time was spent on military personnel and 8.4 percent on their dependents.

Types of nonmilitary medical care. The type of medical care most often performed by medical officers of all three services for nonmilitary persons was outpatient care. Surgery was third in the order of frequency.

Duties that could have been performed adequately by other personnel. Of the 1,437 physicians answering this question, 672 stated that their duties could not have been performed adequately by any other personnel. The 765 (53.2 percent) who believed otherwise listed their personnel or civilian personnel in that order of frequency as capable of performing their duties. A small number indicated nurses and enlisted personnel.

Evaluation of staffing conditions. The great majority of answers indicated that staffing conditions for all classes of medical personnel (physicians, dentists, nurses, enlisted personnel, et ceteta) were considered adequate. Significantly, 180 in the Navy indicated overstaffing, 47 understaffing, and 193 adequate staffing. In the Air Force, 220 reported overstaffing, 46 understaffing, and 177 adequate staffing. In the Army, 196 noted overstaffing, 135 understaffing, and 329 adequate staffing.

Physicians who would voluntarily remain in service. Of the responses to the question, "Under what conditions would you have been willing to serve beyond the required two years?" 28.2 percent stated they would not serve over two years under any conditions, and 66.2 percent indicated a number of reasons for which they would serve an additional period. A small percentage (5.6) did not reply to the question.

If copies of the complete results of this survey are desired, address your request to the Secretary, Council on National Defense, American Medical Association, 535 N. Dearborn St., Chicago, Ill.

OFFICIAL DECORATIONS

LEGION OF MERIT

Frank O Alexander Col MC USA	Walter H Mataska Col MC USA
Elizabeth T Hann Lt Col ANC USA	Harold S McBurney Col MC USA
Vinnie H Jiffers Col MC USA	Wendell A Wille Col MC USA

DISTINGUISHED FLYING CROSS

Arthur M Hedetson Col USAF (MSC)

BRONZE STAR MEDAL

Karl W Banks Maj MSC USA	Rudolph Leapheart Capt MSC USA
Stanley M Baum Capt MC USA	William C. Matoski Capt MC USA
George E Block 1st Lt MC USA	Victor S Messner Maj MSC USA
Francis P Campbell Capt MC USA	William E Pittso Capt MC USA
Paul L Climes 1st Lt MC USA	Robert C. Reed Capt MC USA
Robert M Domau Capt MC USA	Evelyn L Russell Maj ANC USA
John A Everett Capt MC USA	Lowell Saunders 1st Lt MSC USA
George E Gerke Maj MSC USA	Anthony A Versari Capt MC USA
Harry O Hendrick Capt MC USA	Arnold A Wallack 1st Lt MC USA
Stanley P Kotchin Maj MSC USA	William M Zollma Jr 1st Lt MSC USA

COMMENDATION RIBBON

Victor D Anderson, Capt MSC USA	Paul Lee Capt MSC USA
Louis B Arnold Col USAF (MC)	James D Loveless 2d Lt MSC USA
Frances M Barritt Capt ANC USA	James E Massy Jr 1st Lt MSC USA
Irvin H Betts Lt (MC) USNR	Leon S. Mistrano 1st Lt MSC USA
Carshal A Burt Jr 1st Lt MSC USA	Mary R. Mison 1st Lt MC USA
Delma W Caldwell Maj MC USA	Robert A. Piron 1st Lt MC USA
Hsiao S Chung Capt MC USA	Richard E Raab 1st Lt MSC USA
Richard C. Donovan 2d Lt MSC USA	Hamilton W. Riedge Capt MC USA
William E DeYoung 2d Lt MSC USA	Mario G. R. 2d Lt MC USA
James T. Frits Capt DC USA	Wiley L. Roberts Capt MSC USA
John E. Ford 1st Lt MSC USA	Alfred R. Th Capt ANC USA
William M. G. Maj DC USA	David H. Scheffey 1st Lt MSC USA
William E. Gatt 2d Lt MSC USA	John J. Schwab Capt MC USA
John P. Guion 2d Lt MSC USA	Edmund L. Sherwood Capt MC USA
Ernest G. Guy Capt MC USA	John W. S. der 1st Lt MC USA
Edward H. Hale Capt MC USA	Harry T. Stadford Comdr (MC) USN
Edward T. H. 1st Lt MSC USA	Elizabeth R. Thorn 1st Lt ANC USA
Yoshiaki H. Tunaga Maj DC USA	Gina Tryon, Capt. ANC USA
Samuel L. Hoch 1st Lt MC USA	William W. Tucker Capt MC USA
John F. Hows 2d Lt MSC USA	William G. Walker Jr 1st Lt MC USA
Robert J. Kerrig Capt MSC USA	Helen G. Ward Capt ANC USA
George H. Klump Capt MC USA	Gleann R. Webster Capt MSC USA
Claence J. Lall 1st Lt MC USA	James P. Whittemore Capt MC USA

Official Clusters

The names of officers of the medical services who have been awarded decorations by the United States Army, Navy or Air Force are published in this department each month following receipt of information from official sources.—Editor

REGULAR DENTAL CORPS OFFICERS CERTIFIED BY SPECIALTY BOARDS

Since 1930 seven specialty boards have been established with the approval of the American Dental Association to grant certification to qualified dentists. Of these the American Board of Orthodontics was activated first and is the largest. Second in size is the American Board of Oral Surgery which was founded in 1946.

Regular Dental Corps officers of the military services have been certified by the following boards:

American Board of Orthodontics

William H. Dyer, C. L., USA

American Board of Periodontology

Joseph L. Brown, C. L., USA
Harold A. Brayshaw, Lt. C. L., USA
Henry B. Fisher, Lt. C. L., USA

Ernest H. Miller, Lt. C. L., USA
Milton W. Ogilvie, Lt. C. L., USA
Alfred E. Tye, C. L., USA

American Board of Oral Pathology

Joseph L. Bennett, C. L., USA

Robert A. C. Libby, C. M. D., USN

The following list of names of officers certified by the American Board of Oral Surgery will be published in February.

DEATHS

DYAS Dorothy Emma, Captain, ANC, USAR, U. S. Army Hospital, Fort Hood, Texas. Graduated in 1933 from St. Ann's Hospital School of Nursing, Anacostia, D. C. Promoted second lieutenant and died of typhoid fever 24 May 1945, aged 35. N. M. B. 1954, age 47, at Fort Hood, Texas.

SILVEY James David, Major, MSC, USAR, U. S. Army Hospital, Fort Carson, Colorado. Died of military fever 23 November 1936, commissioned cadet 1 November 1926. S. M. B. 1942, died 23 October 1954, age 38, at Fort Carson, Colorado. Nephylia, sick and in poor health.

THE MEDICAL OFFICER WRITES

Articles Published in Other Journals

Anderson R I Capt MSC USA Kent J F and Sand R W Fr en syphil ma
tous rabbit testes as source of Tr p u m p l i d u m f m m o b i l i t i o (TPI) test for
syphilis *Am J Syph* 38 527-530 N v 1954

Armstrong G E M J G n MC USA Tribut to Gen ral Will m Go gas *Mil
Surgeon* 115 247-248 Oct 1954

Artz C P Lt Col MC USA and Howard J M I t a l care of v l y w u n d d
J A M A 156 488-491 O c 2 1954

B A Lt (NC) USN Nursing bo rd hosp tal sh p *Mil Surgeon* 115 289-291 O c
1954

Bern H L Col MC USA R d cal surg ry ft r n r i v e r r d i t i o n A M A
Arch Surg 69 603-606 N v 1954

Berry R G C mdr (DC) USN and Rwan R L Lt (MC) USNR Temporom adibula
joint d s a b o r m l m d i b u l a t f u n c t i o b a s i s A M A *Arch Surg* 69 635-645
Nov 1954

Break to e G E Capt DC USAR Nasop l u n c y t v l i n g g r t e t p o r t i o of
p a l t *Oral Surg* 7 1183-1187 Nov 1954

Bromberg B E Lt (MC) USNR O k y R S Jr Lt (MC) USNR and Wickstrom
O W Capt (MC) USN T a l r c s t r u c t n of nos *Plast & Reconstruct. Surg* 14
298-301 O t 1954

Brck M J F u t Lt MC USAR a d Kutter J H Lt C l MC USA Obser va
t i o n o u s f g a m m a g l b u l i c t r i m s u r e i n p a r a l y t i c p o l i o m y e l i t i n s b i
l i g s e p o r t f t w o c a s *Mil Surgeon* 115 326-331 Nov 1954

Ca y J B Comdr (DC) USN How to get de t a l v l u n t i s *Mil Surgeon* 115
338-339 N 1954

C n H O First Lt MC USAR Sacke-c H t r a i t d p l e n c i n f a r c t i o s s o c t e d
w i t h h i g h l a n d f l y i n g *New England J Med* 251 417-420 Sept. 9 1954

Crosby W H Lt Col MC, USA, and How rd J M Capt MC USA Large trans-
f u s i o of stored blood *Modern Med* 22 70-71 A g 15 1954

Do elly G H Col MC USA and Campbell R E Maj MC, USA Surg cal a
p c t s of p e r i t r i t s o d s A M A *Arch Surg* 69 533-539 Oct 1954

Edwards A Capt MC, USA, Sw rdlow M Capt MC, USA and Berry L M J
MC, USA Cong i t a l c a p i l l r y h m a n g i o m a of p a r t i d s a l i v r y g l n d A M A *Arch
Otolaryng* 60 615-617 Nov 1954

F zio A N Maj USAFR (MC) Apog E A s c o n e J and Reich A Use of
s c c y l c h o l i c c h l o r d e b y c o n t u i n t r a n o u s i f u s i o for production of muscular
r l x r o n (r p o r t of 1 500 c s e s) *Mil Surgeon* 115 319-325 No 1954

G r e m V M Capt USAF (NC) L t e n a n t L e d i n g F o x L e u t a n t S e c k u k u
Nursing R l d 128 18-20 Oct 1954

Gilmore H R Col MC, USA Jam s E Ash b i o g r a p h i c a l s k e t c h *Lab Invest* 3
469-474 No Dec 1954

Graham R. S. Lt (MC) USNR. N gonoc fur h s *Am J Syph* 38 599-605, N 1954.

L dbe R. K. J. L. (18) (MSC) USN. Pra bility f T po m pall d m m bal ation t t on vi e-wid ba U S. N vy *Am J Syph* 38 522-526 No 1954

M kl G. B. IV Capt MC USA. Str ma A. M. A. A b *Surg* 69-756-758 N 1954

M Gibo y J. T. Col MC, USA, d S g B. L. Col MC, USA. In ge cy in tu ut f F d I H p l dm tra *M I Surg on* 115 340-343 N 1954

P lm E. D. L. Col MC, USA. Clin c l p bl m t soph g g tr j on *Am P act & Digest, Treat* 5 764-766 Oc 1954

P kt R. C. L. Col MC, USA, Str bel P. R. Cap WMSC, USA and Ky J. J Maj MSC USA. P p m g m t f p t t w th low tr m ty mp ta on *J. A. M. A.* 156 1070-1076, N 13 1954

Ra G. N. Capt. (MC) USN. W is C. L. Comdr (MC) USNR. H W A Comdr (MSC) USNR. d H rrm R. S. Lt. Comd (MSC) USN. P y hiatr l fo mul t y *J. A. M. A.* 156 817-821 O 30 1954

Seal ta H. E. Cap USAF (MC) M l j E d B m M A f lymph yt *A. M. A. Am J Dis Ch ld* 80 15-24 July 1954

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S tr R. J. d Cr by W. H. Lt Col MC, USA. Change in gula m ha m fill wi g w d g and t w th to d bl d udy f bari e lu *Kor a. Bl od* 9 609-621 J 1954

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S m D. G. Maj USAF (MC) M th ds d l f yea f ball fl gh w th b l g l p mens *J Aviat M d* 25 380-387 A g 1954

Sol A. E. Fir t L. USAF (MC) d Ku J. H. Lt Col MC USA. Quadra us lumborum my fa tis *Northwe t Med* 53 1003-1005 O t 1954

St J. B. Cap USAF (MC) F reb er J. E. d Y b A. T. Sp f d rel bl g l ff f tr g dia mam m luan y m ppl ca p bl m f co m c ray b d *J Aviat on M d* 25 368-377 A g 1954

S ey C. F. Capt. (MC) USN and Ma g A. G. Lt. (MC) USNR. L bar gen fl *A. J Thoracic Surg* 28 536-543 N 1954

V Ey k E. J. L. Col MC USA. Cy f nasal ve bul *Ann Otol Rh & Laryng* 63 863-865 Sept. 1954

V l D. A. Fir Lt USAF (MSC) nd O. K. D. Lt. Col MC USA. Al ratu f f t wen producu f b *A I Surgeo* 115 275-281 Oct 1954

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W te n, E. A. d M l S. Cap MC USA. Cha g in ymbol p io w h mytal s d um *Am J Psych at* 111 193-206 Sept. 1954

Z H V. M. C. I. USAF (NC) F ch born ur vi ts fl gh bool *Mil Surgeo* 115 287-288 O 1954

Zimm rman L. E. Lt. Col MC USA. Demon tr f h pl m d d d o-alled tubercul m fl g *A. M. A. Arch. Int. Med* 94 690-699 N 1954

Reviews of Recent Books

PRINCIPLES AND PRACTICE OF ANTIBIOTIC THERAPY by *Henry Welch*
 Specially edited by *Felix Martí Ibañez* 699 pages Published by Medical Encyclopedia Inc Distributed by The Blakiston Co New York
 N Y 1954 Price \$12

This outstanding book presents in a remarkably fine manner the latest and best of the historical chemical and pharmacological information concerning each antibiotic useful in clinical practice. It is composed of three parts. The first describes the isolation and development of the useful antibiotics thus affording splendid background material for a comprehensive discussion of the important ones and a dissertation on synergism, antagonism and hormesis as it pertains to antimicrobial substances. Part II discusses antibiotic therapy of infectious diseases which are properly grouped and are discussed by outstanding authorities in their respective fields. Part III is entitled Antibiotic Therapy in Medical Specialties and covers ophthalmology, pediatrics, oral surgery and dentistry.

The organization of the book and its bibliographies and index are well done. The volume is one of the finest in this field that has been written in recent years. It seems impossible that a 700 page book could be so up-to-the-minute; the manuscripts of the author and collaborators appear to have been current up to November 1953. This accomplishment in editing and publishing has resulted in the inclusion of all new antibiotics of interest to the clinician.

I strongly recommend this book for medical libraries and clinicians.
 —WILBUR C. BERRY Col MC USA

FUNDAMENTALS OF INTERNAL MEDICINE by *Wallace Mason Yater* M D
 M S with the assistance of *William Francis Olive* M D 4th edition
 1 276 pages illustrated Appleton Century Crofts Inc New York
 N Y 1954 Price \$13.50

In this new edition of a well known textbook of medicine the author and his fellow contributors accomplished remarkably well their purpose of the presentation of the fundamentals of internal medicine in a simple, concise yet comprehensive form. Thus in this one volume will be found the essentials of medical practice exclusive of surgery, obstetrics and the limited specialties.

The various diseases are presented by systems in 20 sections including ones on diseases of the skin, the ear and the eye which usually are not found in a textbook of medicine. Six additional sections include those on dietetics, antibiotics and sulfonamide com-

pounds symptomatic and supportive treatment inhalational therapy useful tables and the physician himself Frequently throughout the text pertinent points are summarized for emphasis The illustrations photographs charts and tables are excellent and suitable references are given at the end of each section

Although this book is evidently written primarily for medical students because of its conciseness interns residents and practitioners will find it helpful and a timesaver

—PATRICK J. M. SHANE C. I. MC USA

THE DIAGNOSIS AND TREATMENT OF CONVULSIVE DISORDERS IN CHILDREN by Samuel L. G. et al. M. D. 320 pages 92 illustrations
Ch. 1 C. Thoma Publ. her Sp. agf. Id. Ill. 1954 P. \$9.50

This new monograph intended primarily for the general practitioner of medicine is based on the combined clinical and electroencephalographic studies of over 4000 children with convulsive disorders observed in the epilepsy clinic of the Johns Hopkins Hospital The various types and causes of convulsive disorders are described and the differential diagnosis and treatment discussed in detail Emphasis is given to epilepsy as the chief offender in the production of the convulsive state In the chapter on drug therapy anticonvulsant drugs are described with recommendations as to their usage in various types of conditions dosage and possible untoward reactions

The discussion of dietary treatment is interesting though controversial Some other observers are less enthusiastic than the author regarding the value of the ketogenic diet in certain types of epilepsy The section on electroencephalography is well done but would seem to be of less value to the average general practitioner than most of the other material offered Of particular interest is the detailed discussion of febrile convulsions as well as the section dealing with the treatment of the child during an actual convulsion A chapter on the surgical treatment of epilepsy is excellent

The book is beautifully organized and is printed with easily readable type The subject matter is presented in an orderly cohesive and interesting manner Each chapter concludes with a extensive bibliography and there is an excellent author and subject index This book is highly recommended to all who are confronted with the complex problem of convulsions in children —THOMAS L. DUFFY Comdr (MC) USA

ANATOMY OF THE BRONCHOVASCULAR SYSTEM by G. G. L. B. et al.
M. O. 300 pages 111 illustrations Th. Y. B. k. P. bl. h. l. Ch. g.
Ill. 1954 P. \$15

The author expressed his original purpose the preparation of an atlas with line drawing of normal and abnormal patterns of the pulmonary vascular system In order to cover the field thoroughly he has written a book on the surgical anatomy of the bronchovascular system with presentation of the significant aspects of embryology anatomy pathology cardiology and experimental and clinical surgery

The volume contains a comprehensive review of the literature with numerous references and quotations throughout the text. The author has cited anomalies in detail with representative drawings of various abnormalities and included a number of case histories. Significant aspects of experimental and clinical surgery are discussed and important operations are outlined in detail.

The book is indexed and well organized and the illustrations are made up of drawings and photographs almost entirely in black and white. There is an excellent bibliography. Because the author has quoted widely from the literature and presented the views of many observers, not everyone will agree with all of his conclusions. Nevertheless this book will be valuable because of the large amount of important information contained on the developments in thoracic surgery.

—CAPT W. HUGHES, Lt Col MC USA

THE AMERICAN TEXTBOOK OF OPERATIVE DENTISTRY edited by Arthur B. Gabel, M.A., D.D.S. 9th edition. 626 pages with 422 illustrations. Lea & Febiger, Philadelphia, Pa. 1954. Price \$10.

Maintaining the high standards of the previous editions, the contributors to this textbook, who are outstanding leaders in their respective fields, present a critical survey of the most recent developments in operative dentistry. Due stress has been placed on the mechanical approach to operative procedures, a phase many practitioners often treat lightly. The author's discussion of this subject is basic and is presented in a clear, concise manner. Various biologic aspects are correlated with proper emphasis.

The section found in previous editions on Dentistry for Children has been omitted because of the editor's belief that the present scope of this specialty includes not only operative procedures but also numerous other related services. The discussion of operative dentistry from a diagnostic standpoint is well conceived and can be summed up by the following quotation: "The evaluation of the extent to which dental disease may influence the health of a patient is one of the most serious responsibilities of the dental profession."

The style, organization, and format are appealing not only to the student but also to the teacher and general practitioner. The 422 illustrations are neatly prepared and are thoroughly explained. The index offers quick reference. The bibliographies and the list for supplementary reading afford access to many better known texts and much research data, which is in keeping with the thoroughness of the authors.

Operative dentistry may be justly considered the first line of defense against most dental diseases and their sequelae. Though in discharging his professional obligations the dentist must have more than a knowledge of his immediate field, this text affords the student and practitioner an excellent opportunity to better serve his patient and profession. — EDWARD R. HILDRETH, *Comdr (DC) USN*

CORONARY HEART DISEASE IN YOUNG ADULTS by *M. A. D. M. G. H.*
M. D. D. P. ul. D. W. b. t. M. D. 218 page illustrated Harvard
University Press Cambridge Mass 1954 Price \$5

This book describes an exhaustive study of 100 patients with coronary occlusion all less than 40 years old. The study was made by a group of investigators each of whom had a different approach to the problem. A matched control group of equal size and a larger unmatched control group also were studied. The controls appear to have been selected to approach the patients as nearly as possible in a number of characteristics. The main spheres of investigation centered in clinical appraisal, family incidence and racial background, anthropometric and morphologic appraisal, athletic activity and occupations, findings on masculinity, endocrine and biochemical findings, dietary factors and the oxidation-reduction potentials of saliva.

The significant evidence which emerged from this three year study supported the original thesis of the group, namely that coronary heart disease is caused by various factors rather than by one critical variation from the normal. It indicates that a consideration of sex, body build, morphologic characteristics, heredity, serum total cholesterol, serum uric acid, the ratio of serum total cholesterol to serum lipid phosphorus, an index derived from the relation of serum uric acid, serum total cholesterol and serum lipid phosphorus, and the salivary redox potential should result in the selection of coronary prone persons. It seems unlikely that any one factor will accurately delineate this group.

The authors have been wise in not attempting to extend their study into the field of therapeutics. The discussions of theories of the cause of atherosclerosis are sufficient to point up the investigation being reported, but are not overly detailed. As a result the reader is carried without diversion to the final evaluation of the results.

The graphs and tables are clear and summarize well an enormous mass of data. References appear after each chapter and the index is adequate.

This type of publication is of great value at a time when the number of articles published on the subject exceeds the reading capacity of the average physician. It is of value also because of the wide selection of experts in varied fields.—RALPH C. PARKER, J. Capt. (MC) USN

ANESTHESIA IN GENERAL PRACTICE by *Stuart C. C. H.* M. D. 4th
 edition 312 page Illustrated Third Year Book Publishing Co.
 Chicago Ill 1954 Price \$5

The original intent of the author of this book was to make available to the medical student and part time anesthetist a practical text on anesthesia. The fact that there have been four editions in 8 years—with the second edition being reprinted twice and the third edition once—indicates that the author has succeeded.

All the usual phases of anesthesia practice are discussed in a dogmatic and practical fashion. The text may be read and understood by the general practitioner but the specialist may find it elementary. Multiple techniques are not included nor are detailed discussions of minor facts of anesthesia. The present edition has brought the material up to date. This book is highly recommended for medical students and beginning anesthesiology residents as a text to read and study. It should be added to the medical library of each teaching institution.

—SCOTT WHITEHOUSE *Comd (MC) USN*

LYLE AND JACKSON'S PRACTICAL ORTHOPTICS IN THE TREATMENT OF SQUINT (And Other Anomalies of Binocular Vision) 4th edition revised by *T Keith Lyle M D M Chir* assisted by *Marianne Walker D B O (T)* 371 pages 195 illustrations including 3 colored plates The Blakiston Co Inc Philadelphia Pa 1953 Price \$12

This book contains a general discussion of strabismus with emphasis on orthoptic training. The theoretical precepts are based on the writings of Chavasse. Various orthoptic devices are described in sufficient detail to permit practical application with emphasis on those used in the office rather than on the home training methods. Both surgery and orthoptic training is used in the treatment of squint. A particularly noteworthy chapter deals with the treatment of paralytic squint and contains a very complete and lucid description of the methods of diagnosis. The style of the book is somewhat heavy and requires considerable concentration to read however the explanatory diagrams are exceedingly well done. There are 60 references. It is believed that the book is very valuable for both ophthalmologists and orthoptic technicians —JOHN E EDWARDS *Lt Col MC USA*

LEGAL MEDICINE edited by *R B H Gadwohl M D Sc D* 1 093 pages 222 illustrations The C V Mosby Co St Louis Mo 1954 Price \$20

This excellent volume is one of the very few that portrays completely the relationship between medicine and law. The subject matter is complete and modern and the data based on current legal statutes is exact, trustworthy and reliable. The editor who is also the author of four chapters had the collaboration of 29 outstanding experts in forensic science and all facets of the subject are well planned. Considering the breadth of medical jurisprudence today the authors have presented their collected thoughts in a remarkable manner and have contributed greatly to the subject of forensic medicine. The reader is thus enabled to better understand this new and exact science.

The text is divided into 39 chapters all are necessary to fulfill the editor's mission and there is little or no overlapping. The style, format and organization of subject matter are excellent. The 222 well selected illustrations are of outstanding quality. Each chapter is well referenced and the book is beautifully indexed.

This text will prove of value to all physicians regardless of their specialties and particularly to those who may be called to testify.

in court. This book will also be valuable to students, law enforcement officers, criminologists, and to most members of the legal profession interested in the subject. This volume should be in the library of every practicing pathologist and scientist working in toxicology.

—RALPH M. THOMPSON, C 1 USAF (MC)

OFFICE GYNECOLOGY by J. P. G. b. H. M. D. F. A. C. S. 6th ed.
517 p. g. Illustr. t. d. The Ye. Book P. M. h. I. Chi. go. Ill.
1954. Pric. \$7.75

The sixth edition of this book, written by an authoritative practicing gynecologist, is directed to the general practitioner, but also purports to provide the gynecologist with a ready source of all he should know concerning the practice of gynecology in an office or outpatient surgery. Although several new chapters have been added, this edition still falls considerably short of the author's goal. Many subjects, such as sterility, endocrinology, menstrual irregularities, pelvic inflammatory disease, hysterosalpingography, and uterotubal insufflation, are treated superficially. Emphasis is given less important subjects such as mechanical concepton control.

The conversational style has continuity, but the organization of the subject matter is poor. An example of this is the inclusion of a new chapter on diseases of the vulva, while discussions of specific diseases of the vulva, such as condyloma acuminatum, pruritus vulvae, and kraurosis vulvae, remain in isolated chapters. The few illustrations in several instances are chosen from commercial sources. They add little to the clarity or completeness of the presentation. The index is adequate. The absence of a bibliography limits the book's usefulness as a reference.

This volume can be read with advantage by the general practitioner, but probably will prove to be inadequate for him as a reference on office gynecology. It will have relatively less value for most gynecologists.

—DWIGHT A. CALLAGAN, Comd. (MC) (SV)

PSYCHOMOTOR ASPECTS OF MENTAL DISEASE by H. E. A. g. Ph. D.
185 p. g. Illustr. t. d. Harvard U. s. ty. P. Cambrdg. M.
1954. Pric. \$3.50

This book presents the details of systematic observations of one phase of psychomotor activity which are of interest in the consideration of psychomotility in mental disease. It is very adequately implemented with 21 figures, 21 tables, a subject index, and an appendix containing the clinical history forms and the rating scales used, and the wiring diagrams of the test apparatus.

The objective in this experiment was to test more thoroughly the existence of a possible relation between psychomotor function and behavior disorder, and to examine in greater detail any positive trends which might emerge. The subjects tested included a group of patients with a chronic mental disease (schizophrenics), a group with subacute mental disease (pseudoneurotic schizophrenics and neurotics), and a

group without disease. The author describes in considerable detail how groups were selected for the study and also the test procedures. The focus of the study is on fine movement (hand and finger actions) but gross movements are included in the observations of psychomotor activities by subjects with mental disorders. He includes the only broad review of the experimental literature related to this topic citing 142 references.

The data recorded in this experiment offer a clear demonstration of defective fine psychomotor performance in patients with a behavior disorder and a direct relationship of considerable subtlety between speed in fine psychomotor performance and the degree of disorder present. There are indications that the psychomotor defect appears to increase with the severity of the disease process.

This volume should be of interest to psychologists, psychiatrists, neurologists, and neurophysiologists.

—PHILLIP B. SMITH, Lt. Col. MC USA

NEW AND NONOFFICIAL REMEDIES. Containing Descriptions of the Articles which Stand Accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1954. Issued Under the Direction and Supervision of the Council on Pharmacy and Chemistry. American Medical Association, 609 pages. Illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1954. Price \$2.65.

This well known book is published annually. The primary objective of the Council, appointed by the Board of Trustees of the American Medical Association to consider medicinal and allied preparations offered for prophylactic, diagnostic, or therapeutic use by the physician, is to encourage the practice of rational therapeutics. As in the past, the drugs accepted for inclusion in the book are arranged according to pharmacologic action. There are 24 separate sections of drugs so arranged. A typical monograph for a drug includes the chemical or official name, the commercially available preparations of the drug, the strength and potency forms in which available, and the pharmaceutical houses manufacturing the item. There is also a short description of the drug with its actions, uses, and dosage.

The first portion of the book contains such information as official rules governing admission of drugs, criteria for the evaluation of certain products, labeling requirements, decisions of the Council that may be of general interest, and a table of metric doses with approximate apothecary equivalents. An innovation is the publication of lists of drugs omitted and of new drugs added since the previous edition. The section entitled "Bibliography of Unaccepted Products" was omitted from this edition. The book continues to contain an index to distributors of accepted items and a complete general index.

This book provides the physician with such information concerning the actions, usage, limitations, and dosage of acceptable and relatively new drugs as will promote the practice of rational therapeutics.

—HENRY D. ROTH, Lt. Col. MSC USA

THE DIAGNOSIS AND TREATMENT OF THE INFERTILE FEMALE by
F d A S m m n s M D 83 pag Illustrat d Ch 1 C Thomas
Publ h r Sp g f ld III 1954 P c \$2.50

This concise monograph dealing with the problems encountered in diagnosing and treating conditions producing infertility in the female is divided into 20 chapters and contains 83 pages with seven figures and three tables. The author's style provides effortless reading and he has included only important and necessary steps in the systematic approach to problems of sterility.

The chapters devoted to diagnosis are complete and emphasize the need for a preconceived plan of action to be followed by the examiner in his quest for the cause of infertility in each and every patient. Likewise the sections devoted to treatment are adequate—they contain the most modern thinking on the subject and properly caution the reader regarding the anticipated low salvage in cases stemming from endocrine deficiencies other than thyroid.

The chapters on artificial insemination and adoption contain much useful and important information stating the problem unequivocally and with dispatch.

The last chapter presents the more important psychosomatic causes of infertility.

This small well-written monograph will be of particular value to the student and general practitioner but will prove a ready source of reference for the specialist in obstetrics and gynecology. It rightfully belongs in the libraries of all physicians treating sterility of the female patient.—WILLIAM S BAKER J Comb (VC) USN

CLINICAL ROENTGENOLOGY Volume II Th II d Neck d Spinal
Column by Alfred A de Lormer M D Henry G Moehring M D
and J b R H nan, M D 488 pag 734 ill strat Charlie C
Thomas Publ h r Sp ng f ld III 1954 P \$18.50

This monograph is volume 2 of a four-volume set and covers the clinical roentgenology of the head, neck, and spinal column. These divisions of the body are discussed through multiple clinical entities found by practicing roentgenologists. This is a rather unusual method of classification because of the possibility of omission; however, the authors have succeeded admirably in covering the field by including all of the most common lesions encountered in these sections of the body. The anatomic and roentgenologic findings are well correlated with the clinical evidence of abnormality.

There are excellent sections on the use of contrast in tetral angiography, encephalography, and ventriculography. Of special note is a large section on dental radiography and diagnosis not duplicated elsewhere.

Each section is brief to the point and well organized. Each subject is discussed under specific headings such as general considerations

roentgen manifestations, clinical manifestations laboratory co-operation and differential considerations Pertinent references are included The volume is fully and beautifully illustrated with excellent examples of the subject matter From a technical standpoint these include some of the finest cuts of radiographs that the reviewer has seen The book is adequately indexed to permit easy reference to any particular problem

The authors are to be congratulated on such an excellent presentation This volume is a welcome addition to any medical library as an excellent reference for either specialist or novice

—SYLVESTER F WILLIAMS *Capt (MC) USN*

TEACHING IN THE OUTPATIENT DEPARTMENT by *Siste May Isadore Lennon R. N. M. A.* 240 pages illustrated G. P. Putnam's Sons New York N. Y. 1954 Price \$4.

This book on outpatient department teaching is divided into four major units: concepts basic to outpatient department work; education program; integration of social and health aspects; and evaluation of the teaching program The appendixes deal with family studies, budgets, well child conferences, and the qualifications and duties of outpatient department personnel Of the 42 illustrations, those representing interrelationships of outpatient divisions, records of patient care, and records of student experience and evaluation are good Perhaps some of the photographs could be clearer from the standpoint of subject matter and technic

Sources of related visual aids and materials are presented with most of the sections At the end of each subsection there is a time saving terminology list References are numerous and timely, about one third of them dated 1950 or later One error in terminology appears in the section on injection technic for the diabetic patient where "sterilize" is used in relation to directions for surgically cleansing the skin

To administrators the author offers the challenge of further improving understanding between hospital and community agencies regarding their co-operative functions in caring for the sick Her point of view as practitioner as well as scholar embraces the care of the entire patient with all his needs, the full development of the student nurse, and the team concept of personnel relationships

—LILLIAN B. SCHOONOVER *Lt (NC) USN*

ANATOMY FOR SURGEONS VOLUME I THE HEAD AND NECK by *Herry Hollinshead Ph. D.* 560 pages 326 illustrations Paul B. Hoeber Inc. New York N. Y. 1954 Price \$12

This volume deals with the regional anatomy of the head and neck for the practicing surgeon and is not a complete descriptive anatomic text It is intended as a review of basic anatomy and as a refresher of those details necessary for the mature surgeon These objectives are admirably accomplished

The book is divided into nine sections on the cranium orbit ear nose and paranasal sinuses fascia and fascial spaces of the head and neck face jaws palate and tongue pharynx and larynx and neck. In each section the subject matter is well organized and covers the essential anatomic principles. Also—and this is what makes the book especially valuable to the surgeon—the major anomalies and variations are given embryologic physiologic and neurophysiologic correlations are presented and recent anatomic and clinical work is included. The operative approaches to various regions and the position of those structures easily injured during operations is well presented. The presentation throughout is from the standpoint of the operating surgeon.

The illustrations are simple and clear. There is a bibliography of appropriate references at the end of each section and the index is adequate.

This book is well named and is truly a clinical surgical anatomy. It should prove a welcome companion for the operating surgeon and is highly recommended for surgical residents and especially for general surgeons. —JOSEPH J. ZUSKA, Capt (MC) USN

LABORATORY AIDS IN ENDOCRINE DIAGNOSIS by Robert F. Blount, M.D. American Laboratory Series, Publication Number 212, American Medical Graphical Board, Division of American Laboratory, Edited by William O. Thompson, M.D. 131 pages, 11 treated Chapters, Clothbound, Published Springfield, Ill. 1954, Price \$4.75.

This is a short but useful text covering the laboratory methods that frequently aid in the diagnosis and treatment of endocrinopathies. As the author points out, these techniques are for the most part only aids or adjuncts in diagnosis and in following the effects of the treatment of endocrine diseases. Information concerning such diseases that can be obtained from the usual laboratory tests is reviewed. The techniques and critiques of the various special metabolic studies, urine hormone tests, special tests of blood, sperm counts, testicular biopsies, vaginal smears, and roentgenographic examinations are well presented. The endocrine disease index in the final chapter should prove most useful to interns, residents, and all physicians who see patients with endocrine disorders. —ROBERT F. BLOUNT, Col, MC USA

DISEASES OF THE SKIN by Oliver S. Ormby, M.D. and H. M. Little, M.D. formerly M.D. M.S. 8th edition, authorship revised, 1503 pages, with 666 figures, 750 illustrations, 18 colored illustrations on 11 plates, L. & F. Lange, Philadelphia, Pa. 1954, Price \$22.

This latest revision of an outstanding standard text and complete reference source should be available to all medical libraries and owned by all doctors interested in skin diseases. The bulk of the book makes it cumbersome to read, but the text is concise and the subjects are well indexed.

The superior features of the older editions of the histopathology and multiple clear illustrations have been retained with necessary revisions. The sections on physiology, chemistry and diseases of the sweat glands are markedly improved and demonstrate the great changes in basic sciences since the previous edition. The section on syphilology has been reduced in scope but is adequate for today's needs. Nelson's treponemal immobilization test for the diagnosis of syphilis however is not adequately described nor are its uses explained. Pigmentation and the diseases associated with it are newly included with the latest treatments. Extensive additions are noted on two hitherto fatal diseases pemphigus and lupus erythematosus with emphasis on the newest diagnostic tests. The portion concerning mycology is of general interest to all physicians and includes the latest laboratory work on this difficult subject.

This book represents a magnificent monument to the late senior author — EDWARD F. GUDGEL, M.D., M.C. USA.

PRACTICAL FLUID THERAPY IN PEDIATRICS by Fontaine S. Hill, M.D.
275 pages illustrated W. B. Saunders Co. Philadelphia, Pa. 1954
Price \$6.

This book was evidently written for clinician who have not kept abreast with the current literature concerning fluid and electrolyte balance in the human body and in particular for those physicians concerned with the treatment of infants and children. The elementary principles of the physiology of water and electrolyte in the human body are presented in the first section. The bedside application of these principles for various clinical conditions with considerable repetition for the purpose of emphasis is discussed in the second section of the book.

The third and shortest section of the book is devoted to techniques of obtaining blood specimen from and administering of parental fluids to infants and young children. These techniques are suitably illustrated. An adequate bibliography and index are included. This book is suitable for students and interns and for others who might desire to review the subject — PATRICK J. McSHANE, Col. M.C. USA.

THE PAINFUL PHANTOM Psychology, Physiology and Treatment, by Lawrence C. Kolb, M.D. 300 pages. Charles C. Thomas, Springfield, Ill. 1954. Price \$1.50.

The first section of this monograph is devoted to a description of the phantom phenomena and the second section to case illustrations, and a summary of existing theories as to the etiology of the phantom physiology of the painful phantom.

The author provides evidence to indicate that the existence of a nonpainful phantom is a healthy physiological response to the loss of any amputation of a limb or other body part. It is not a pathological condition.

tation the psychologically healthy person slowly reorganizes his body image by means of the new sensory experiences related to the changed body form and the phantom gradually disappears. It may persist or reappear if a physical defect irritating the afferent nerves is present. Its persistence in the absence of an organic factor and the failure of the limb amputee to make the necessary psychologic and social adjustments indicates a pre-existing personality disturbance. The chronicity of the pain and its refractiveness to heroic therapy leads the author to conclude that it is psychologically maintained. This is further confirmed by the response to psychiatric therapy. Analysis of the underlying dynamics reveals hostility and dependency to be important factors. The opinion is expressed that the postoperative phenomena of an acutely painful phantom with attendant behavior disturbance constitutes a psychiatric emergency.

This small volume should prove valuable to both surgeon and psychiatrist. It indicates the need of a combined therapeutic approach on the part of both in the management of the painful phantom.

—JOHN J. KALANAGH, M.D., USAF (MC)

A DYNAMIC PSYCHOPATHOLOGY OF CHILDHOOD by La. H. B. and M. A. M. D. 275 pag. Ill. and Ch. I. C. Th. ma. P. bli. h. Spr. g. f. ld. Ill. 1954 P. \$7.50

This volume, the third in the Bellevue Studies of Child Psychiatry, in no way provides the broad foundation for understanding the various problems of emotional development in childhood that its title seems to promise. In a narrower sense, however, it does delve into various areas of psychopathological responses by presenting a wealth of fascinating clinical material. Most of this has appeared earlier, but its current presentation is deemed warranted because of follow-up studies several years later. Although well aware of the difficulties involved in obtaining follow-up evaluation of any sort, I was disappointed in the generally cursory and inconclusive nature of most of these later studies.

The sections on hallucinatory experiences, imaginative companions, and internalization of fantasy objects are worth-while reading, not only for the psychiatrist but for anyone else who works with children and needs to understand them. The positive attitude taken toward these experiences, in considering them efforts on the part of the child to experience a satisfactory reality in the face of an obviously unsatisfactory one, is refreshing when so often any expression of fantasy life is looked upon as evidence of a pathologic process.

The discussion of impulses, obsession, and compulsions offers much of value to the child psychiatrist and also contains many concepts especially useful to the military psychiatrist. I found the sections treating of sexual expression of identification conflicts full of surprising and interesting case material but lacking in constructive interpretation or practical applicability.

An article of particular general interest at this time is one treating of the effect of comic books on the ideology of children. Originally written in 1941 by the author and Dr Reginald Lourie and modified only slightly in its present printing, it takes the view that such publications offer children an opportunity to work out their relationships to the social group—a sort of spoon fed dream life—and that as such they have definite positive value. There is room for considerable controversy. For example, the article advises comic book artists to avoid depicting "actual mutilation or violence or death" as occurring in relationship to any character with which the child can identify himself or his parents or his cause. Nor should any such act be committed by such a character *unless the situation can be morally justified* (italics mine). Shades of the Inquisition and the Salem witch hunt!

The article on the personality of Lewis Carroll as derived from Alice's adventures and written by Paul Schilder in 1938 has no legitimate place in this volume nor has the section on children's reactions to war "which is labored, artificial and (because it represents more nearly a reaction to a questionnaire concerning war than to war itself) of doubtful validity and value."

The volumes of this series could be improved by severe editing to achieve better continuity, less repetition, and a more nearly uniform over-all viewpoint. On the whole, however, this book should be a "must" on the reading list of any psychiatrist treating children or handling character disorders in adults. —JAMES N. SUSSEX, *Combs* (MC) USN

NECK DISSECTIONS by James Barrett Brown, M.D. and Frank McDowell, M.D. American Lecture Series, Publication Number 207. A Monograph in The Bannerstone Division of American Lectures in Surgery. 163 pages, illustrated. Charles C. Thomas, Publisher, Springfield, Ill. 1954. Price \$7.50.

The subject of definitive therapy of cancer of the head and neck is an extremely broad one to be so adequately covered in a small text. The authors describe the method of a complete examination of the head and neck of a patient presenting himself with a carcinoma. Step by step, the reader is led through the examination of the cancer and at the same time an examination of associated parts, including vessels and lymph system near and distant to the original site. Even in this day of a "cancer conscious" lay public, this latter portion of the examination is too frequently neglected by physicians to whom patients first present themselves. After the primary site is located, the reader is then led through the indications for and limitations of neck dissection. Once the decision is made to resort to surgery, there is a concise, excellently presented description of the preoperative measures, the technic of unilateral dissection, unilateral plus supraomohyoid dissection of the opposite side, and bilateral upper dissection, accompanied by excellent illustrations in color. This section is followed by a description of the postoperative care and the results to be ex-

pected. Of special note is the section on neck dissection and jaw resection with an illustrated description of implants and grafts to preserve oral physiology.

This book is of special interest to general surgeons, plastic surgeons, oral surgeons, dentists, and otolaryngologists because it outlines the only definitive therapeutic course to be followed if cancer is to be cured. In advocating dispensing with the term prophylactic neck dissection, the authors have taken an extremely desirable step because in over 30 percent of patients without palpable lymph nodes, small metastases were present histopathologically, thereby making the procedure a necessary one.

The authors dwell on the elimination of the necessity of tracheotomy in surgical procedures of the mouth, jaw, and neck. This policy may cause the younger, less experienced surgeon to postpone this procedure until the very last, thus necessitating an emergency tracheotomy instead of permitting an orderly planned procedure which the patient would be in better physical condition to withstand. Tracheotomy is a simple procedure and in most instances should be performed prophylactically.

The bibliography is complete and more than adequate to make any oncologist and surgeon thoroughly conversant in the field of cancer. This is an excellent text because of the straightforward teaching manner in which it is presented, leaving no doubt in the mind of the reader as to the course of therapy to follow to decrease the mortality rates in cancer of the head and neck.

—FRANK A. FERRI, Lt Col, USAF (MC)

MEDICAL USES OF CORTISONE, edited by F. D. W. L. & M. D.
534 pages, illustrated, The Blakiston Company, New York, N. Y. 1954.
Price \$7.50.

This excellent book is a summation and appraisal of the experiences, observations, and studies of 29 outstanding specialists regarding the physiology, pharmacology, and clinical effects of cortisone, hydrocortisone, and corticotropin, both systemic and topical, during the five years the substances have been available. Their employment in all the specialties is well covered, and the editor deserves much credit for condensing into one small volume the current concepts of these authorities. They are both factual and practical.

The fundamental theme of the book is that while these products cure no disease, they afford gratifying relief. It is agreed that there is a valuable place in therapeutics for drugs such as these in combating those diseases which do not take life but just ruin it. Complications, side effects, and contraindications are well delineated, and the displacement of cortisone by hydrocortisone is foreshadowed. Some of the authors have added the reports of others to their own valuable ex-

perience. The bibliographies of a number of chapters contain 500 references or more.

The chapters on physiology, pharmacology, collagen diseases, asthma, dermatology, and ophthalmology are particularly good. The chapter on rheumatoid arthritis is disappointing because of the meager review of rheumatoid spondylitis and the illustrations of dosage schemes (figs. 22, 23, and 24) which are simplified to absurdity. The authors, however, place emphasis on tailoring therapy to the individual and remind the reader that although the steroids and corticotropin may cause side effects, the diseases they alleviate are often disabling.

This book will prove a most valuable reference and guide to all who prescribe cortisone, hydrocortisone, and corticotropin.

—JULIAN LOVE, Capt (MC) USN

DEPRESSION, edited by Paul H. Hoch, M.D., and Joseph Zubin, Ph.D. 277 pages. Grune & Stratton, Inc., New York, N.Y., 1954. Price \$5.50.

This work comprises the proceedings of the forty-second annual meeting of the American Psychopathological Association in New York City in June 1952. The symposium on depression is presented as a series of separate papers representing many different approaches and disciplines for its study. The 20 contributors and six discussants are well known in the field and they cover a broad approach to the study of depression.

The reader may not find much that is new to him. The workers in each field have reviewed the progress or, in some cases, lack of it, and presented theories for future investigation. The coverage is broad but, as is stated, some fields are not included because no new work is in progress or because suitable contributions were not available for the symposium. The symposium indicates that the causes of depression have not been discovered. There has been considerable progress, however, in understanding the dynamics of depression. Diverse approaches have revealed significant relationships among the many disciplines that will eventually lead to a knowledge of the obviously multidetermined causes.

Psychiatrists and interested workers in allied fields will find this book a helpful review of the various studies of the problem of depression. The scientist who may have become isolated in his own approach to the problem is given an opportunity to see what his colleagues are doing. The bibliographies are extensive and candidates for the American Board Examination in Psychiatry will find them helpful in their review. The appendix includes a list of officers and members of the American Psychopathological Association.

—ROBERT L. WILLIAMS, Maj, USAF (MC)

THE YEAR BOOK OF PATHOLOGY AND CLINICAL PATHOLOGY edited by
William B. Wintman, M.D. 485 pages illustrated. The Year Book
1954 Price \$6

The presentation of material in this Year Book follows the same format as the 1952 edition however this edition is about one fifth larger in size

The extracts are selections from 1953 publications covering all fields of pathology and clinical pathology. The editors have succeeded extremely well in selecting out of the large field of publications only those articles of general interest to the pathologist. Numerous photographs and charts are included.

The book is highly recommended. It should be of value to all pathologists.

—RUSSELL H. WALKER, Capt (MC) USAF

THE DOCTOR WRITES. A Pathology for the Unusual. Current Medical Literature edited by S. O. Wafer, M.D. F.A.C.P. 175 pages. Gru & Stratton Inc. New York, N.Y. 1954. Price \$3.75.

Few physicians other than professional editors had the time and good fortune to read all of the 17 articles reprinted in this small pathology when they first appeared in medical journals during 1953. Only one editor had the enterprise to put between covers these unusual articles from the current literature so that they could be enjoyed by those who missed them earlier.

Each piece deviates in its own direction from ordinary scientific reports. One author presents a remarkable amount of medical lore culled from the Bible. Another dispels the myth that many great physicians now dead possessed superior clinical acumen over today's practitioners. From one of A. Conan Doyle's teachers in medical school, Dr. Joseph Bell, the reader learns something about Sherlock Holmes' powers of deduction as a dermatologist. Others include the strange story of Dr. Albert Abrams, the second American to write a book on the heart (1900) who became a colossal quack, the bitter controversy that followed Roentgen's famous discovery, a sensible plea to reduce multiple authorship of scientific articles, and a few tricks of showmanship in medical teaching. The best, in my opinion, is "An Unusual Obstetrical Case History Derived from the Pen of William Shakespeare." Here the humor is high and unusual, is the understatement of the year.

This is the kind of a book which beats occasional rereading because it does not age. It reveals unsuspected literary skill among physicians who have strayed off the beaten path for their themes. Best of all, it is interesting—in a day when so much that is written is not. Dr. Wafer, now a member of the staff of this Journal, has produced a book that will be enjoyed by everyone who reads for pleasure.

—ROBERT J. BENFORD, Col USAF (MC)

THE STATUS OF MULTIPLE SCLEROSIS A l s f Th N w Y k A d my f Sc
f Sc e c s Volum 58 Art 5 p g 541 720 July 28 1954 Ed t
R y Waldo M Conf re ce Ch rm P c B l y Org g
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P ce \$4 50

PROPERTIES OF SURFACES An l I Th N w Y k A d my f Sc
V l me 58 Art 6 p g 721 970 Sep mbet 15 1954 Ed t
R y Waldo M Conf c Ch rm d Co ult g Ed C l /
A g 249 p g Il t t d Th N w Y k A d my of Sci N w
Y k N Y 1954 Pr \$3 50

THE THEMATIC APPERCEPTION TEST AND THE CHILDREN'S APPER
CEPTION TEST IN CLINICAL USE by L p l d B l l k, M. D w th
th f Mary B t l 282 p g Il t t d G &
Str tton Inc N w York N Y 1954 P \$6 75

MODERN OCCUPATIONAL MEDICINE d t d by A. J. Fl m g M S
M D A ta t Medical Dir t E l duP t d N m ur d Com
p y d C. A. D A l M O F A C P Sp l A ta M d r
l O E l duP t d N m ur d Comp y A ciate Ed t
J. A. Zapp Ph O Dir t Il sk ll L borat y for To l gy d
l d tr l Med E l d P t d N m ur d Comp y 414 p g
44 Illustrat ns 2 col 32 t bl L & F bige Ph l d l phia
P 1954 P \$10

THE MICROPHYSICAL WORLD by W l l m H l n, Ph D (L p g) D S
(L nd) F R S. F l l w f A g Coll g L d nd P of
Em t f Phy th U r r y f Lond n 216 p ge Il t t d
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THE YEAR BOOK OF PEDIATRICS (1954 1955 Y B k Se) d t d by
S y d y S G l l M O A t t P l or f P d iat r Il vrd
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B k P bl h Inc Ch go Ill 1954 P \$6

PRINCIPLES OF INTERNAL MEDICINE Ed T R H n R ym d
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M. W. W t b 1 703 p g Il t t d w th 87 p ge d 2d d t
f tud t r l me d The Bl k t Co l N w Y k
N Y 1954 P \$16

INTRODUCTION TO SURGERY by V g A l d F t M D f to
f f Surgery Coll g l Phy c nd Surg Col mb
U r y A nd g Surg l P thol g t P byt H p t l
N w Y k d H l d Dort H r y M D A u P f f
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Y rk 3d d 233 p ge O loxd U t r y P N w Y k N Y
1954 f \$4

THE YEAR BOOK OF GENERAL SURGERY (1954 1955 Y Book Se)
d d by E t A G ham A B M D E v e r u P f f
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L u t w h t A th d d by S t u a t C. C. H
M D f f f Surge y nd Ch rma f D is f A n e th
ol gy Sta U r y f l w C l l ge f M d d l l p tal 500
p g Illustr d Th Y B o k P bl h Inc Ch go Ill
1954 Pr \$6

- THE DEVELOPMENT OF MODERN SOCIOLOGY** Its Nature and Growth in the United States by *Roscoe C. Hinkle Jr* and *Gisela J. Hinkle* University of Rochester Doubleday Short Studies in Sociology SSS 6. Consulting Editor *Charles H. Page* Professor of Sociology, Smith College 75 pages Doubleday & Co. Inc. Garden City N. Y. 1954 Price \$0.95
- THE COLON: ITS NORMAL AND ABNORMAL PHYSIOLOGY AND THERAPEUTICS** Annals of The New York Academy of Sciences Volume 58 Art. 4 pages 293-340 July 15 1954 Editor *Roy Waldo Viner* Organizing Chairman *M. L. Tainter* Conference Chairman *Thomas P. Almy* Consulting Editor *M. L. Tainter* 74 pages illustrated The New York Academy of Sciences New York N. Y. 1954 Price \$4.50
- MEREDITH'S HYGIENE** A Textbook for College Students on Physical, Mental, and Social Health from Personal and Public Aspects by *Arthur P. Davis* B. S. Ed. M. Dr. P. H. Professor of Physical Education The Pennsylvania State University and *Warren H. Southworth* B. S. M. A. Dr. P. H. Professor of Health Education The University of Wisconsin 5th edition 906 pages illustrated The Blakiston Co. Inc. New York N. Y. 1954 Price \$6
- THE YEAR BOOK OF MEDICINE** (1954-1955 Year Book Series) edited by *Paul B. Beeson* M. D. *Carl Muschenheim* M. D. *William B. Castle* M. D. *Tinsley R. Harrison* M. D. *Franz J. Ingelfinger* M. D. and *Philip A. Bondy* M. D. 711 pages illustrated The Year Book Publishers Inc. Chicago Ill. 1954 Price \$6.
- UNIVERSITY EDUCATION FOR ADMINISTRATION IN HOSPITALS** A Study inaugurated by the Association of University Programs in Hospital Administration. A Report of the Commission on University Education in Hospital Administration 1954 199 pages Published by American Council on Education Washington D. C. 1954 Price \$3
- BIOCHEMICAL DETERMINANTS OF MICROBIAL DISEASES** by *Rene J. Dubos* The Rockefeller Institute for Medical Research 152 pages Harvard University Press Cambridge Mass. 1954 Price \$3.50
- PSYCHOLOGY IN NURSING PRACTICE** 2d edition. *Lester D. Coz* Ph. D. Associate Professor of Education Brooklyn College *Alice Cou* Ph. D. Assistant Professor of Education Brooklyn College *Charles E. Skinner* Ph. D. Professor of Education New York University 435 pages illustrated The Macmillan Co. New York N. Y. 1954
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Calot, R. C. Pernicious and secondary anemia, chlorosis and leukemia. In Oler, W. (editor), *Modern Medicine*, 3d edition. Lea & Febiger, Philadelphia, Pa., 1937. Vol. 6, pp. 33-100.

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Monthly Message

Nowadays neither the Command in the Armed Forces nor even the physician in civil life gives heed to the serious problems of infection and epidemics which only a comparatively few years ago were the nightmares of their commands. At the dawn of the century for example mortality from typhoid fever varied between 10 and 30 percent which persisted until the advent of typhoid inoculation just prior to World War I. Even for those who recovered the morbidity and resulting loss of manpower were fantastic.

Scarlet fever The hospital mortality was 5 to 10 percent in mild epidemics and 20 to 30 percent in severe epidemics.

Measles In large cities this ranked third in the mortality of the eruptive fevers due chiefly to its pulmonary complications.

Whooping cough Taken with its complications whooping cough must be regarded as a very fatal infection (Osler's *Principles and Practices of Medicine* 2d edition 1895) It was regarded as third among fatal diseases in children in England.

Diphtheria The mortality was 30 to 50 percent.

Erysipelas A mortality of 4 to 7 percent.

Cholera A mortality of 30 to 80 percent varying with epidemics.

Tetanus The mortality was 80 percent following trauma.

Tuberculosis In 1900 the death rate was 183.9 per 100 thousand as against 12.2 per 100 thousand in 1953.

Pneumonia During my medical school days this disease carried a mortality of 20 to 30 percent about 65 percent in the aged. Now the mortality is low and the disease itself far less common. The influenza epidemic of 1918 needs no comment with its widespread morbidity and heavy mortality.

Diabetes has been largely conquered through the use of insulin.

Pernicious anemia is now well controlled by the use of

The "floating hospitals" that were so common in my own medical school days in an attempt to control the infectious diarrhea of infants in the summer are now things of the past, and so also is the fatal diarrhea of infants that was so prevalent each summer

All of this has occurred within my own lifetime and much of it since World War I. It could all happen again with any let down in our measures of prevention both in sanitary engineering and in medicine and I would bid all of you, lay and professional alike, consider the need of continued constant vigilance

Frank B Berry

FRANK B BERRY M D
Assistant Secretary of Defense
(Health and Medical)

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UNITED STATES ARMED FORCES MEDICAL JOURNAL

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Number 3

INTRA ARTERIAL vs RAPID INTRAVENOUS BLOOD TRANSFUSIONS

Experiences in a Forward Surgical Hospital in Korea

CURTIS P. ARTZ *Lieutenant Colonel MC USA*

YOSHIO SAKO *Captain MC USA*

ALVIN W. BRONWELL *Captain MC USA*

EARLY in the Korean conflict, intra arterial blood transfusion was used in the resuscitation of hundreds of men critically injured in battle. The resulting impressions of the many surgeons in the theater varied so widely that, after an extensive clinical experience, we initiated a clinical evaluation of transfusion by the intra arterial route in an attempt to outline the possible indications for the procedure. During the early phase of the study, every patient with severe oligemic shock received an intra arterial transfusion. Blood was usually transfused into the femoral artery through a 15- or 17 gage needle. The femoral artery was surgically isolated and the surgeon held the needle in the artery during the administration of the blood. A Rochester plastic needle was used in two patients after cutting down on the femoral artery and in one patient blood was given directly into the aorta through a 17 gage needle during a laparotomy.

The technique of surgically isolating the femoral artery and holding the needle in place during the rapid infusion of blood was feasible. Minimal amounts of blood were given simultaneously by intravenous infusion. The maximum amount of blood normally given intra arterially was 3,000 cc though in one patient who received 4,500 cc, intra arterial transfusion was discontinued as soon as the patient's systolic blood pressure reached 100, and further replacement therapy was given intravenously. No complications occurred from this therapy. When the needle was removed from the artery, any bleeding was readily controlled with a small piece of golf foam and gentle pressure. The large

From Surgical Research Team, Army Medical Service Graduate School, Washington, D. C. Col. Artz is now assigned to Brooke Army Medical Center, Fort Sam Houston, Texas.

gage needle because of its larger lumen was preferable to the Rochester plastic needle. Unless the surgeon steadied the needle during the pressure transfusion it would impinge on the wall of the artery and a free flow of blood would be impeded.

RESULTS

After seven patients in severe oligemic shock had been resuscitated by intravenous blood transfusion through multiple veins the data were assembled. Six patients had received intra arterial transfusions and seven had received rapid intravenous transfusions. In the clinical evaluation of the patients in the two groups the degree of shock was comparable. Four patients in the former group and only one in the latter group were admitted with an unobtainable blood pressure. The degree of injury and amount of hemorrhage however was greater in those receiving blood intravenously and the amount of blood required for resuscitation was slightly higher. The data on these patients are summarized in tables 1 and 2.

There was no appreciable difference in the rate at which blood was given to patients via artery it was 88 cc per minute and via vein 70 cc per minute. No attempt was made to achieve an absolute maximum rate of infusion by either method. Those data represented the actual accomplishments of blood replacement at one forward surgical hospital in a small comparable series of patients in deep oligemic shock. In one moribund patient not included in this series a definite attempt was made to determine how rapidly blood could be infused by the intravenous route. In 30 minutes 5 500 cc of blood were injected into two veins through 15 gage needles. 3 500 cc of the blood were pumped into one vein in 21 minutes. This demonstrated that blood can be given very rapidly by the intravenous route.

After the controlled use of intra arterial transfusion in six patients it was our belief that the patients did not show any appreciably improved response as compared with patients who received blood at a comparable rate through multiple intravenous routes.

DISCUSSION

Proponents of the belief that intra arterial transfusion is superior to intravenous transfusion in the treatment of hemorrhagic shock have cited the following reasons to account for its supposed superiority. (1) blood given intra arterially increases the coronary and cerebral arterial flow. (2) direct infusion into the arterial tree causes an instantaneous rise due to the amphydrostatic effect, (3) blood given intravenously would tend to pool whereas intra arterial blood readily mixes and (4) blood

TABLE 1 Patients receiving intra arterial blood transfusions

Patient	Wound	Blood pressure on admission	Time in minutes	Amount of blood (cc)	Rate per minute (cc)	Results
1	Multiple of body sucking of chest traumatic amputation of right hand	0/0	45	3 000	70	Recovered
2	Traumatic amputation of left leg penetration of right thigh abdomen and hand fracture of clavicle		60	4 500	75	Recovered
3	Traumatic amputation of right leg fracture of radius and humerus perforation of chest	0/0	35	3 000	86	Died on operating table
4	Penetration of chest and abdomen perforation of right arm	0/0	30	1 500	50	Recovered
5	Perforation of inferior vena cava laceration of left kidney perfora- tion of duodenum	120/80	10	1 500	150	Died 3 1/2 hours follow- ing operation
6	Penetration of abdomen and sig- moid colon laceration of super- ficial femoral artery penetration of right leg	0/0	30	3 000 (and 1 500 cc dextrao)	100	Recovered
	Average rate				88	

TABLE 2 *Petersburg* *transfusions*

Patient	Wound	Blood Pressure	Time in minutes	Amount of blood (cc)	Rate per minute (cc)	Result
1	Perforation of abdominal cavity of right side	0/0	45	3 000	70	Died on operating table
2	Perforation of right side of chest	140/70	60	5 000	83	Recovered
3	Multiperforation of right side of abdomen and right leg	50/30	108	5 000	46	Died
4	Perforation of abdomen and right leg	140/80	15	1 500	100	Recovered
5	Perforation of right side of abdomen	80/40	45	3 000	70	Recovered
6	Transverse incision of right side of thigh	30/?	75	4 000	53	Recovered
	Transverse incision of right side of thigh	90/70	65	5 000	77	Died on operating table
	Average				70	

can be administered more rapidly by the intra arterial route. These four reasons are given as *primo factors* in the superiority of intra arterial transfusion over intravenous infusion. At the time most of these statements were made, there was no experimental or clinical evidence to support their contentions.

Recently a number of well-designed experiments were carried out in an attempt to evaluate the role of some of the above mentioned factors. Kohlstaedt and Page,¹ and Case and associates,² studied the effects on coronary flow and arterial pressure following intra arterial and intravenous infusion of equal magnitude in dogs in oligemic shock for varying periods of time. They were able to show in repeated experiments that coronary flow and arterial pressures responded just as rapidly and to the same extent with either intravenous or intra arterial blood transfusions. In addition, the right and left auricular and pulmonary artery pressures were measured and found to be the same during both types of transfusion. Their conclusion was that their data did not constitute a contraindication to intra arterial blood transfusion but that there was no convincing evidence that it was superior to intravenous blood transfusion.

Patients in shock may not have a discernible vein suitable for giving infusions, but if by surgical means the same search is made to locate a vein as an artery, it could be found. Moreover, when necessary, the femoral vein is always available for cannulation. The statement that blood can be administered more rapidly by the intra arterial than by the intravenous route is not true. Case and associates in summarizing their findings stated that the rate of administration is a function of the pressure in the bottle, pressure in the vessel, resistance to the flow of blood in the needle and tubing, and the viscosity of blood. Under those circumstances, blood can be administered more rapidly through the intravenous route. Another statement frequently made is that blood administered by the intravenous route will produce cardiac failure. There is evidence to show that this is so only after the blood pressure has returned to normal or when there is an underlying cardiac disease. The contention that direct infusion into the artery at rates as currently practiced will cause a rise in pressure due to hydrostatic effect has not been substantiated. Maloney and co-workers³ gave rapid infusions of blood, both intravenously and intra arterially, and measured cardiac output by the blue-dye injection method. They also measured mean arterial pressure on a series of normal dogs and on dogs in shock due to hemorrhage. They were unable to demonstrate any difference in the rise in arterial pressure by transfusion through either route. Case and associates cited other experimental work along the same line of investigation indicating that an animal in oli

genic shock did not respond more favorably to intra arterial blood transfusion than to intravenous blood transfusion. The volumes of blood concerned when transposed from the rate of a dog to that of a man were in the realm of 445 cc per minute this rate is much higher than the rates given in a clinical operation.

Richards and Hansen also studied the comparative action of intra arterial and intravenous transfusion in the treatment of oligemic shock. They found no demonstrable advantage of intra arterial over intravenous transfusion when equal infusion rates were used. They stated that rapid intravenous transfusion was well tolerated particularly when vessels were in a collapsed state due to hemorrhage. They concluded that this was logical because the blood flow to and from the heart per minute is many times the volume of blood which can be forced into the circulation by any type of pressure of transfusion in a similar length of time. Prior to their experimental work statements regarding the advantages of intra arterial transfusion over the intravenous route were made without being substantiated by clinical or laboratory experiments.

A situation in which intra arterial transfusion may be indicated is in the resuscitation of a patient whose heart is in asystole because once the output of blood from the left ventricle has ceased there is no other way for the blood to get into the arterial tree. Another situation would be the sudden need for massive transfusion during an operation for mitral stenosis to get blood into the arterial tree. Except for these two unusual circumstances, most of us believe that there are certain disadvantages associated with the process of intra arterial transfusion. Cases have been reported of arterial insufficiency necessitating amputation of an extremity,⁷ tissue necrosis, arterial spasm caused by arterial cannulation and in some instances a delay in getting the blood infused because of additional time required to begin the intra arterial transfusion. A major criticism by most investigators on the work of those who present the advantages of intra arterial transfusion over intravenous transfusion is that their clinical as well as experimental investigations have not dealt with comparable rates of infusion of blood.²⁻⁴ In some instances conclusions were based on patients in whom four times as much blood was given by the intra arterial route as was given to others by the intravenous route.

Because the impressions gained from patients in whom blood was given primarily by the intra arterial route coincided clinically with the above experimental data intra arterial transfusions were discontinued in favor of rapid intravenous infusion of blood through multiple large gauge needles or intravenous cannulas.

CONCLUSIONS

No definite conclusions can be drawn from this very limited experience. Our impressions were that blood given by the intra arterial route was of no more value in the resuscitation of patients in deep oligemic shock than was blood administered by the intravenous route, if it was given at the same rate. In one forward surgical hospital, it was observed that blood replacement in a small series of similarly severely wounded patients was accomplished as rapidly by multiple intravenous routes as it was by the intra arterial route.

SUMMARY

The clinical evaluation of intra arterial blood transfusions administered to six patients who were wounded in combat was compared to the results obtained by rapid intravenous transfusions given to seven men who also were combat casualties. The average rate of blood given intra arterially was 88 cc per minute, and intravenously, 70 cc per minute. These were actual rates at which blood was given and not the maximum rates possible. There was no discernible difference in the rate of response between the patients who received blood intra arterially and intravenously.

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A NEW LABEL FOR AN OLD ACQUAINTANCE

The official journal of The Association of Military Surgeons of the United States known since 1901 as *The Military Surgeon* on 1 January 1955 became *Military Medicine*. This new title more accurately identifies the nature of the publication whereas its previous name often resulted in the misconception that the articles were limited to the field of surgery. Volumes of the monthly issues will be continued in sequence the January 1955 issue being number 1 of volume 116.

COMPARISON OF HUMAN AND SHEEP BLOOD AGAR IN DETECTING STREPTOCOCCUS

Observations in Acute Tonsillitis and Pharyngitis

WILLIAM F. NUESSELE *Capt. U.S.A.F. (MC)*
DONALD E. WRIGHT *Sgt. U.S.A.F. (MSC)*
PAUL R. JONES *Staff Sgt. U.S.A.F.*

IN A STUDY of the causative organisms of tonsillitis and pharyngitis in patients admitted to this hospital observations were first made on and data collected from 135 men admitted with these conditions in the three month period from September through November 1953.

In general the hospitalized patients displayed exudate marked fever or toxicity. Bacterial cultures were performed on admission by streaking a pharyngeal swab over human blood agar plates.

These plates were prepared by using donor blood which had reached the expiration date usually three to four weeks. Fifteen cubic centimeters of blood containing 0.035 gram of dextrose, 0.031 gram of sodium citrate and 0.011 gram of citric acid as anticoagulant were added to 250 cc of media consisting of 2.5 grams of bacto tryptose, 0.75 gram of bacto beef extract, 1.25 grams of sodium chloride, 4.25 grams of bacto-agar and distilled water.

Streptococcus viridans or *Streptococcus pyogenes* was usually obtained. The following is the frequency of occurrence of each organism: *Str. pyogenes* 51, *Str. viridans* 40, *Str. pyogenes* and *Str. viridans* 26, *Diplococcus pneumoniae* 9, nonhemolytic streptococci 5 and *Micrococcus pyogenes* 4.

Str. pyogenes was found in a total of 77 instances. There was little difference in those showing various bacteria in regard to fever, exudate, glandular enlargement, or duration of illness.

It was then suggested that sheep blood be substituted for human blood in preparation of plates. Sheep blood plates were accordingly prepared similarly to the human plates except that the blood was fresh and 135 cultures were obtained from consecutive adult male patients admitted with acute tonsillitis and pharyngitis in an 11 week period beginning in February 1954.

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Str pyogenes was obtained in every instance. This organism predominated in all but 13 cultures when only scattered colonies were found. It was at times associated with *Str viridans* and in six instances with *M pyogenes*.

To determine the difference between human and sheep blood agar plates in detecting *Str pyogenes* throat swabs from each of 20 patients were streaked on both types of medium. Only 10 of the 20 human blood plates showed *Str pyogenes* but the sheep blood plates revealed it in every instance. In each of the two series, the colonies were limited or scattered in three instances. In the 10 remaining human plates *Str viridans* predominated in nine and *D pneumoniae* in one.

Throat cultures on sheep blood agar were then obtained in 14 unselected personnel from the hospital kitchen. *Str pyogenes* was found on 13 plates. It was the predominant organism in five. None of these five persons admitted respiratory symptoms, though three of the eight others with streptococci did.

CLINICAL CONSIDERATIONS

Clinical comparison of the 135 subjects tested on human blood agar (group 1) and those on sheep blood agar (group 2) revealed no essential difference. The age distribution, presence of exudate, degree and duration of fever, total and differential white blood cell count, presence of tonsillar hypertrophy or cervical node enlargement, and duration of hospitalization were very similar in both groups. This suggests that clinically, at any rate, there was no significant difference in the infection present in the two groups, which makes the bacteriologic findings (on the two types of blood agar) more pertinent.

Antibiotic therapy usually consisted of 360 mg (600,000 units) of penicillin procaine daily. Another antibiotic was used when patients were allergic to penicillin or when penicillin had been unsuccessful as outpatient therapy. During hospitalization, it was believed necessary to change from penicillin to another antibiotic in eight patients from group 1 and in 13 from group 2. Penicillin sensitivity was the reason for change in three cases from each group. In the other 15 who had more than one antibiotic, response to penicillin was considered satisfactory.

Marked gastrointestinal symptoms, including nausea, vomiting, and diarrhea were present in 15 of the total of 270 patients. Bronchitis and sinusitis were common. Herpes simplex was present in 16 of the 135 patients in group 2.

The average stay in the hospital was four days. Twenty-nine patients were hospitalized 10 days or more. Twenty-four of these had a complicating disease.

DISCUSSION

Str. pyogenes was found in a larger number of patients on streaked sheep blood agar plates than on human blood. Sheep blood is recommended by some³ in culturing streptococci. Feller and others and Feller and Stevens found sheep blood agar a reliable means of detecting group A streptococci.

There is some question whether the patients reported had true streptococcus disease. Leukocytosis, exudation, and rising anti-streptolysin titers are considered reliable indexes of streptococcus infection. Routine antistreptolysin titers were not performed in the reported patients. Initial high titers have been reported in most instances of streptococcus infection in an endemic area. About five percent of the people of a community harbor group A streptococci; however, such carriers of streptococci usually show only a small number of organisms on culture. The same authors found that true streptococcus infection with antibody response in convalescence frequently produced a predominant growth of *Str. pyogenes* on throat culture. It is likely that in endemic areas a large proportion of apparently healthy persons harbor streptococci. A recent report² indicated that 90 percent of 53 patients with streptococcus infection harbored the organism three months after the illness. Studies here indicate that 13 of 14 men (93 percent) working in the hospital kitchen showed *Str. pyogenes* on throat culture.

It is possible that some of the difference in hemolysis on human and sheep blood represents a human error. Recent workers have emphasized that classification of hemolytic streptococci from surface colonies was an arbitrary decision between the alpha prime and beta varieties. A more reasonable explanation for the apparent deficiency in hemolysis on human blood agar is the presence of an inhibiting factor in the blood. Antistreptolysin could be such a factor. Our human blood was obtained from donors who lived in this apparently endemic streptococcus area. Antistreptolysin O titers were performed on four patients from the surgical service whose history revealed no recent infection. Titers were 100, 125, and (in two) 250 Todd units. Values of 250 units have been considered significant. When antistreptolysin titers were performed on four patients with recent pharyngitis, two were 166 and 250, and two were greater than 333 units. It is likely that many persons have high titers of antistreptolysin here, such as was reported at another endemic area.

SUMMARY AND CONCLUSIONS

Cultures from 135 hospitalized military men with acute tonsillitis and pharyngitis were streaked on human blood agar. *Str.*

pyogenes was found in 77 cultures. One hundred thirty five subsequent patients with sore throats had cultures performed on sheep blood agar. *Str. pyogenes* the predominant organism in 122 was found in every instance. The clinical findings in the two groups were essentially the same. In 20 patients from the second group, cultures were made on both human and sheep blood. *Str. pyogenes* was present on 10 of the human blood agar plates, and on all 20 of the sheep blood plates.

It is suggested that there may be a factor in human blood which inhibits growth and hemolysis of *Str. pyogenes*. This theoretically, could be antistreptolysin, which is apparently present in high titrations in the blood of persons from endemic streptococcus disease areas.

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The editor who works over a poor manuscript can make it fairly presentable but it never hides the lack of talent completely. It is like trying to hide a day's growth of beard with talcum powder. You cannot do it. It may look all right at a distance but when you get up close the beard shows through.

—HUGH H. HUSSEY, M.D.
in GP p 62 Dec. 1954

CLINICAL ASPECTS OF HYSTERIA

JACK C WESTMAN L t na t (jun g ad) (MC) USNR

HYSTERIA is of interest to all physicians because it is a psychiatric syndrome touching each field of medicine. In the older psychiatric literature hysteria was thought to be an illness occurring primarily in women but military experience has revealed that it is not uncommon in men. Davis and Blick¹ for example, found that 18 percent of 1 218 psychoneurotic servicemen presented symptoms of hysteria.

When an organic cause cannot be found a complaint is often suspected of being of psychogenic origin and is sometimes erroneously believed to be due to hysteria. Because physical complaints without structural basis are typically found in other psychiatric conditions further investigation is necessary in order to establish the diagnosis of hysteria. Somatic symptoms are commonly associated with anxiety reactions depression and schizophrenia. For example a headache for which no organic cause can be found may be a manifestation of an underlying schizophrenic process chest pain may be one facet of an anxiety state and in middle aged persons a depression may present itself primarily through somatic complaints.

In the modern psychiatric nomenclature the word hysteria has been supplanted by the term "conversion reaction" or conversion hysteria. Most psychiatrists now believe that the dissociative phenomena of amnesia fugue somnambulism and multiple personality previously considered forms of hysteria are qualitatively distinct from conversion hysteria.

The conversion reaction includes somatic symptoms involving the voluntary neuromuscular and sensory perceptual systems. Paralysis tic tremor and aphonia illustrate the former anes- thesia, paresthesia pain deafness and visual defect are ex- amples of the latter. In essence the conversion symptom pre- sents itself as an alteration in function of a part of the body innervated by the voluntary nervous system. Study of this syn- drome has revealed a group of salient features which are typical of the reaction type.

The conversion symptom usually appears in a person with a predisposing personality pattern, commonly known as the "hysterical personality." The life history of the patient frequently reveals the following character traits: emotional instability, vivid fantasy life, morbid desire for sympathy, egocentricity, and suggestibility. In other words, he appears to be generally "emotionally immature and superficial," although he may show excellence in intellectual spheres. Proficiency in dramatics and a tendency toward exhibitionism are often encountered. This type of person has been described as possessing strong dependency needs and as tending to lean on a stronger person, like a child on a parent.

A second characteristic is that the symptom has a symbolic meaning for the patient. Often it may be related to his previous experience with illness. It may represent a past event in his life, symbolize a distasteful impulse, or be directly acquired from an illness of another person. This factor operates on an unconscious level, obscure to the patient's awareness.

Another important feature is that the symptom may be an elaboration of an already existing organic defect. This point emphasizes the need for an exhaustive physical examination as a necessary first step in establishing the diagnosis of conversion reaction.

The symptom does not comply with anatomic fact and is related to the patient's knowledge of medicine and anatomy. A person sophisticated in medical matters may present symptoms that are difficult to differentiate from organic disease. This is particularly true with patients who have had frequent physical examinations.

The patient is often relatively indifferent toward his symptom. This attitude has been characterized by Janet as "la belle indifférence." It leads to the frequent finding that the patient is comparatively free from anxiety while he possesses the symptom, illustrating that the symptom literally "drains off" or encapsulates his anxiety. A corollary to this observation lies in the fact that many patients become extremely anxious when their symptom is abruptly removed. Herein exists the danger in the premature alleviation of a conversion symptom.

The neuro-presenting symptom usually follows a stressful situation which may be elicited by inquiry into the circumstances surrounding the onset of the illness. Often the patients are vague and appear to have a memory loss for these facts, however, persistent history taking is fruitful in almost every case. It is clear

that the symptom offers an escape from a painful anxiety producing circumstance

The last point is that a background of sexual inadequacy is a frequent finding and is often dynamically related to the origin of the conversion symptom. Hippocrates was not far from the truth when he implicated a wandering uterus as a causative factor in illnesses that he termed hysterical. In women a rejection of sexual function is frequently manifested as frigidity. In men a basically feminine orientation is often observed, especially in the sense of rejection of an aggressive masculine role.

The foregoing principles may be advantageously illustrated by the following case presentations.

CASE REPORTS

Case 1 A 21 year-old *marine* was hospitalized because of paralysis and pain involving his left arm. His illness began six weeks prior to admission when he first noticed pain in his left upper arm under the metal buckle of his gun strap while on the rifle range during basic training. The discomfort extended to the medial aspect of his forearm and was characterized by several remissions and exacerbations. On returning from leave at his home one week prior to admission he woke in the morning with total paralysis of the left arm.

Family history disclosed that the patient was the fourth of six siblings and that he relied heavily for advice and counsel on an older sister. For six years his father had paralysis of his right leg of unknown cause initially displaying symptoms similar to those presented by the patient. During the patient's leave his father suffered from a heart attack. His mother worked in order to support her family and invalid husband. She was the dominating figure in the home. A paternal uncle also had paralysis of a lower extremity and another uncle was a chronic invalid throughout most of his life. Personal history revealed that the patient finished college at the age of 19, graduating with distinction. Throughout his scholastic career he had furnished some degree of financial support to his family while actively participating in extracurricular activities. At the age of five his left arm was injured in a washing machine roller and thereafter he considered that extremity to be weaker than the right. He exhibited little interest in heterosexual activities.

This patient's case illustrates the development of a conversion paralysis similar to his father's affliction, elaborated from an underlying median neuropathy in an extremity which had been injured during childhood. A previous history of academic excellence was present. Emotional reliance on an older sister illustrated his basic immaturity and dependency. In response to the stress of Marine Corps basic training and separation from home he reacted with functional incapacity consistent with his

passive orientation. When his symptom was removed by suggestion, the patient began to have typical hyperventilation attacks and other manifestations of "free-floating" anxiety. His symptoms were ultimately alleviated when he was separated from military service.

Case 2 A 27 year old naval enlisted man was hospitalized because of paralysis of the left side of his body associated with dramatic complaints of "drawing" and pain of three days duration. His symptoms developed following threats of injury to him made by a fellow seaman.

Family history disclosed that the patient was the youngest of four children. He claimed to be the passive recipient of abuse and rejection by his siblings. He was closely attached to his mother who died one year previously following a cerebrovascular accident causing left hemiplegia. His father died from cirrhosis of the liver and chronic alcoholism. Throughout his life the patient leaned upon other persons, helplessness characterizing his relationships with them. He was avid in religious affairs, aspiring to be a minister or a radio actor. His psychosexual adjustment was inadequate and he had divorced and remarried his wife.

Here again a predisposing personality pattern of immaturity was elicited, and previous experience with a similar syndrome in his mother was present. A pattern of sexual inadequacy and a precipitating stressful situation were found. In response to threats of injury to himself the patient reacted with fear of death from a stroke like that of his mother's, probably stemming from his lifelong feminine orientation which may have been a result of contacts with a weak alcoholic father and a domineering mother.

DISCUSSION

Essential to the concept of hysteria is the fact that a conversion symptom provides an indirect but effective method of manipulating the patient's environment. Thus in women recurrent abdominal pain may conveniently excuse a wife from marital relations and furnish a means of expressing hostility toward her husband. Not infrequently posttraumatic disability remains refractory to treatment until compensation matters have been settled. In unpleasant military situations aphonia offers a means of escape to less threatening surroundings. The secondary gain inherent in the conversion symptom often appears to be more adequately described as primary gain, especially in military practice; however, study of most cases reveals that symptom production operates on an unconscious level. The symptom usually is only a manifestation of a more pervasive illness.

A thorough physical examination is a prerequisite to establishing the diagnosis of conversion reaction. Psychiatric study

should disclose the purpose and symbolic meaning of the symptom in addition to the presence of hysterical personality traits. The diagnosis cannot be made on the basis of either physical or psychiatric examination alone. Occasionally the true diagnosis is overlooked because of physical signs associated with the conversion symptom. When present these signs are clearly secondary to loss of function. Examples are disuse atrophy, edema, and alterations in skin temperature and color following conversion paralysis.

Treatment of the conversion reaction is directed toward the underlying personality structure through intensive psychotherapy. Removal of the presenting symptom by employing suggestion enhanced by any of a number of physical agents is usually a comparatively simple matter. When used with suggestion, barbiturate narcosis, hypnosis, and carbon dioxide inhalations are of value. The important point is that the patient should be allowed to part with his symptom gracefully.

SUMMARY

A symptom without demonstrable organic basis may be a manifestation of several psychiatric illnesses. It represents a conversion reaction when it presents an alteration in function of part of the body innervated by the voluntary nervous system and when it serves an unconscious purpose for the patient. Typical features of the conversion reaction are (1) predisposing hysterical personality, (2) symbolic meaning of the symptom, (3) possibility of the symptom being an elaboration of organic defect, (4) disparity between findings and anatomic fact, (5) relative indifference of patient toward symptom, (6) production of symptom by stressful situation, and (7) background of sexual inadequacy.

Treatment includes psychotherapy directed toward those underlying personality traits which lead to the production of symptoms. The removal of the presenting symptom may be accomplished by suggestion enhanced by pharmacological agents or hypnosis.

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RIP CORD FOR EMERGENCY RELEASE OF IMMOBILIZED MANDIBLE

KIMBLE A. TRAEGER *Lieutenant (DC) USN*

IT IS generally agreed that when maxillofacial fractures are adequately treated during the first 24 hours after injury the results are notably better than those obtained after delayed treatment. In patients with facial fractures who require intermaxillary fixation immediate treatment is frequently delayed because of the danger of asphyxiation due to vomiting. This danger is particularly great in patients having a full complement of teeth, with the teeth fixed in occlusion it would be virtually impossible to expectorate vomitus.

In military operations it is often necessary to transport patients for long distances. "Air evacuation has been used efficiently in Korea, and the air evacuation airplane will play an increasingly important role in military planning operations and successes." Unfortunately, airsickness is occasionally encountered during flight and is one of the most important problems in aviation medicine. It is a constant threat and hazard to the patient with intermaxillary fixation.

"Airsickness may be defined as a condition occurring principally as a result of accelerations in aircraft flight which is marked by nausea, vomiting, instinctive fear, pallor, sweating, vertigo, and prostration. It may require several hours for an attack to reach the vomiting stage but in some instances it has been observed that a case will progress from normal to violent nausea and vomiting within a few seconds."² This condition is normally self-limited but vomiting could prove disastrous to the patient with intermaxillary fixation. The effectiveness of various drugs for the prophylaxis of motion sickness has been investigated, but the exact mechanism by which protection against motion sickness is achieved is not known, and no completely satisfactory drug is now available.³

Should nausea occur during air evacuation, even the patient equipped with scissors or wire cutters would have considerable difficulty removing the fixation in order to open his mouth. The time required to remove intermaxillary fixation depends largely on the type used. When instruments are readily available, and under

ideal conditions trained personnel can remove an intermaxillary elastic or wire fixation in a few seconds. During various stages of evacuation, however, neither the desired instruments nor the personnel may be available. Scissors or wire cutters, even when given to the patient, are frequently lost or misplaced.

EVALUATION OF EXISTING METHODS

A preliminary study was done under ideal conditions to determine about how long it would take to remove a few common types of intermaxillary fixation. Four patients were selected and the

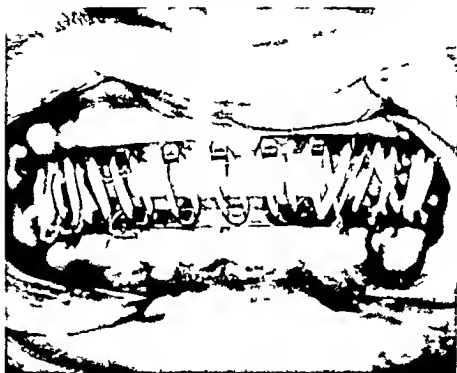


Fig. 1. Intermaxillary elastics applied to mandibular and maxillary arch bars.

time to remove their fixation was determined. A nurse with 17 years' experience in nursing was asked to remove the fixation for a patient as quickly as possible so that he could open his mouth. The patient had intermaxillary elastics applied to mandibular and maxillary arch bars (fig. 1). The patient was seated in the dental chair and good lighting was used. The nurse required 45 seconds to remove the fixation so that the patient could open his mouth.

A dental intern with no experience in the treatment of fractures was asked to remove the fixation of another patient. This patient had two intermaxillary wires in addition to intermaxillary

elastics attached to mandibular and maxillary arch bars (fig 2) The time required for the dental intern to remove the intermaxillary fixation was 42 seconds

A third patient had three intermaxillary elastics attached to bicuspid Ivy wire loops on the right side, and a single intermaxillary wire on the left side (fig 3) The patient was given crown and bridge scissors, placed in front of a wall mirror, and told to cut the wire and rubber bands so that he could open his mouth as quickly as possible He required five seconds to cut the elastics and an additional 21 seconds to cut the single wire



Figure 2. Two intermaxillary wires in addition to intermaxillary elastics

A fourth patient had Gilmer type wire fixation attached to the four bicuspid teeth (fig 4) This patient, though using crown and bridge scissors of the type frequently given patients with intermaxillary fixation, was unable to cut a single wire A trained dental technician, using wire cutters, cut the fixation in 13 seconds

A NEW METHOD

A method for simple, quick removal of intermaxillary fixation was therefore desired One method, similar to the cotter key method,⁴ and found to be satisfactory, makes use of a 20-gage hypodermic needle as a "rip cord" Such a rip cord arrangement



Figure 3 Intraoral fixation of the elastic on the right side and a glintermaxillary wire on the left side



Figure 4 A Glnier type wire fixation

not only prevent the flow of water during the period in which
working is in active being, but also make it possible for the
operator to remove the fixture and over the mouth in a few sec-
onds.

The pressure in the foot of the cord involves trac-
tion and is to needles held parallel to the occlusal plane of the

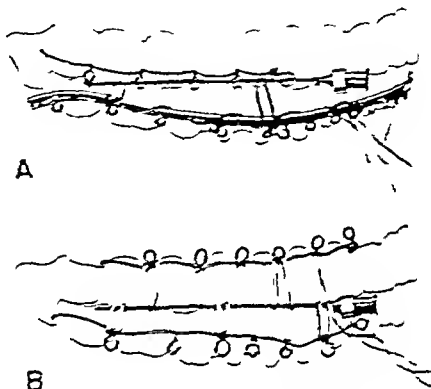


Figure 2. (A) Intermaxillary wire and (B) elastic traction.

used, the use of directly to teeth in the occlusal area. When the
needles are removed, the intermaxillary traction is released and
the patient is allowed to over the mouth.

PROCEDURE

There are a number of combinations of wiring and fixation ap-
proaches to which the wire cord principle could be applied. The
method works very well in patients having an arch bar attached
to one arch and wire loops around the teeth of the opposing
arch. The points are removed from two 30-gauge hypodermic
needles and the ends made blunt and harmless to tissues. The
needles are then inserted through the wire loops one needle in
each side. The teeth are brought into occlusion. Wires are at-
tached to the arch bar, arranged around the needles and tight-
ened. - cord or heavy dental floss is secured to the back of the

needles and allowed to hang from the patient's mouth. When the cords are pulled the needles slip from between the wires enabling the patient to open his mouth (fig. 5A).

If elastic traction is used the elastics are placed first from one arch to the other in the usual manner. A needle is then placed between the buccal tissue and the elastics. The elastics are then alternately removed from one arch bringing the elastics over the needle and attached to the opposite arch (figs. 5B and 6).



Fig. 6. Illustration of elastic fixation of the lip cord for emergency release of immobilization.

The minor inconvenience of the needles is well tolerated by the patient when he realizes that because of them he will be able to open his mouth promptly if necessary. The patient should thoroughly understand the reasons for the use of such an appliance and be instructed not to remove the needles except in an emergency.

While serving with the First Marine Division in Korea I used the lip cord type of fixation on seven patients. Prior to their being transferred each patient was asked to pull the lip cords to be sure of proper function. When wire fixation was used the patients were able to pull the lip cords and open the mouth in what seemed to be a fraction of a second. A somewhat more vigorous pull was required to remove the fixation when elastics

were used. In no case, however, was more than five seconds required to remove the fixation and open the mouth.

SUMMARY AND CONCLUSIONS

Because air evacuation of casualties is becoming more and more the transportation method of choice, it is increasingly necessary to consider the problems of nausea and regurgitation occasioned by motion sickness in patients with immobilized jaws.

It is evident that in the event of motion sickness and nausea even trained personnel require a dangerously long period of time to relieve immobilized jaws. Every precaution must be taken to provide opportunity for the earliest possible release of immobilization appliances in these emergencies. The device described herein, a 20-gauge hypodermic needle used as a "rip cord" in the manner of a cotter key, allows satisfactory fixation and provides the patient with a simple, quick method of removing the fixation if necessary.

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ESOPHAGEAL SPEECH FOLLOWING LARYNGECTOMY

A person confronted with the advice of laryngectomy is naturally disturbed not only by the knowledge that he has cancer but also by the fact that the only means of successful treatment entails loss of his voice forever. How will he be able to work and communicate with his family and friends? This is so upsetting that not infrequently the patient is anxious to seek another form of treatment even though the chance of cure be less. Fear of loss of the voice has too frequently caused a patient to accept less than he needed in treatment and has influenced a physician toward conservatism later to be regretted. Laryngectomy is not to be feared to the degree inasmuch as useful and adequate vocal rehabilitation may be attained in a few weeks with a little work. Esophageal speech can be learned readily by any one who can swallow and belch under control.

—NORMAN JESBERG M D
in *California Medicine*
p 80 Feb 1954

CIRCUMCISION OF THE NEWBORN INFANT IN THE DELIVERY ROOM

ERNST R MOELLER *C mm ml (MC) USN*

EDWARD M MOSS *L t nant (MC) USNR*

IN THE past 24 months about 2 400 newborn infants have been circumcised in the delivery room of this hospital prior to transfer to the nursery Hovsopian and Miller and Snyder² reported a similar policy with satisfactory results

During the past decade the unprecedented and progressive increase in the birth rate and the nationwide demand for hospital maternity care together with the shortage of beds and nurses have created serious professional and administrative hospital problems The expansion of large central maternity nurseries with overcrowding and an inadequate number of attendants has increased the hazard of infection Just as many of these factors have served to give impetus to the practice of early ambulation of post-partum and surgical patients they have of necessity caused a reconsideration and evaluation of many previously established and static practices We altered our practices where possible to keep our patient census at a minimum decrease the hazards of infection and conserve the time of our personnel

The increased demand for circumcision of the newborn by the vast majority of parents posed many problems for all members of the medical and nursing staff The period of hospitalization for normal post partum patients and newborn infants was variable usually three to six days depending upon the availability of beds This created a problem in the scheduling of circumcision 24 hours previous to the mother's discharge If the mother had to be discharged earlier than anticipated a last-minute surgical procedure would be necessary before leaving the hospital or else a return trip to the outpatient department at a later date by both the mother and the infant This resulted in undue hardship because many of our patients lived beyond a 50 mile radius

In addition to the scheduling difficulties nursery and other personnel expended considerably more time in the preparation of circumcision packs and assisting in the procedure Further more the medical officer assigned to perform the circumcision would of necessity invade the already crowded nursery or the

patient would be transported to and from the nursery to the selected surgical suite. The medical officer would be required to prepare both himself and the patient for the operation and any unavoidable delay in his arrival by other urgent duties would only entail loss of valuable time for his assistants.

Study of the problem suggested the practicability of early neonatal or delivery room circumcision as a partial solution, i. e. to conserve time for the medical officer and nursery staff and to simultaneously minimize the dangers of infection by decreasing traffic to and from the nursery.

PROCEDURE

The simplicity of this method is noteworthy. Upon hospital admission the expectant mother signs an operative permit, provided she desires circumcision in the event she delivers a male infant. When circumstances demand hurried transfer to the delivery room, signature is readily obtained post partum, because from 30 to 45 mg. of piperocaine hydrochloride (reticaine) is usually administered for saddle block anesthesia. The attending obstetrician then performs the circumcision after the cord is ligated and after it is determined that the infant is a normal, healthy male.

The infant is transferred to the accessory table used originally for the sterile drapes and towels required for delivery. The infant may be strapped to a circumcision board or held by an attendant (We have favored the latter method.) The corpsman or other attending assistant extends his hands and arms beneath the sterile drape and above the table to hold the legs in slight flexion and moderately abducted. The previous aseptic management of the newborn infant dispenses with the need for either skin preparation or sterile drapes for the operative field. Either the Gomco clamp technique or dissection and amputation of the foreskin is performed, a choice entirely dependent on the method preferred by the attending physician. Either method takes but a few minutes. The Gomco clamp procedure was used in about 80 percent of our patients and dissection in the remainder. The results obtained have been uniformly excellent. There have been no cases of infection in this series, nor have there been any cases of excessive bleeding, which occasionally occurs when the procedure is done on the fourth or fifth day of life.

If for any reason, any distress is present, the operation is deferred until a later date. Also, if it is the opinion of the attending physician that circumcision is contraindicated because the infant was slow to breathe normally or cry lustily, the procedure is deferred until a later date. Other conditions of deferment are prematurity, evidence of developmental defects, and potential erythroblastosis fetalis.

The number of circumcisions done in the nursery on the fourth day of life is now less than three percent of the total circumcisions done. This figure does not include the premature infants.

It is not the purpose of this article to discuss the advisability or nonadvisability of performing a circumcision. This has been discussed many times previously and the literature is filled with articles both pro and con. The majority of the parents of our newborn male infants requested that circumcision be done.

We believe that this procedure is of value for the following reasons:

1. Conservation of valuable time for the medical officer and the nursing staff because of (1) availability of the infant (2) avoidance of need for additional sterile pack setup (3) avoidance of need for skin preparation and draping of the operative field (4) employment of only delivery room personnel during the period of immobilization associated with post-partum observation of the mother (5) avoidance of the surgeon's preparation for the operation and (6) lack of demand upon nursery personnel for assistance in the operation.

2. It decreases the number of personnel entering the nursery who are not intimately associated with the care of the newborn infant. This decreases the possibilities of introducing infecting organisms into the nursery.

3. Reduction in the possibility of hemorrhage.

Grossman and associates collected data on 21 normal newborn infants which revealed that whole blood clotting time during the first six hours of life ranged from seven to 38 minutes with an average of 14 minutes. On the third day they found that the clotting time was 10 to 60 minutes with an average of 25 minutes and on the fifth day of life it ranged from six to 38 minutes with an average of 16 minutes. The platelet values of their patients were all within the adult normal limits. The prothrombin concentration showed a wide variation of patterns typically high on the first day, low on the third day and high on the fifth. Grossman studied the prothrombin level by the Quick method and noted a drop in the normal level after the first 24 hours of life which did not rise until the third day. Smith summarized several contributions regarding hemorrhagic diseases of the newborn infant and noted the normal prothrombin level at birth. This level then fell for the first three days of life and did not return to normal until the seventh or eighth day of life. Sturgis likewise showed that the prothrombin level of umbilical cord blood at birth is not again achieved until the seventh day of life. Waddell and Guerry⁷ showed that prothrombin deficiencies most commonly occur between the ages of 48 and 72 hours. The systolic blood pressure increases from 60 mm Hg at birth to 80 mm Hg at the end of the first week.

4 The infant is observed by trained nursery personnel during the postoperative period. This results in early detection of infection with resultant early therapy if occasion demands.

5 The mother is spared the concern over an open wound because the circumcision is healed by the date of discharge, thus an important factor in parental anxiety is eliminated.

SUMMARY

This article describes our experience with 2,400 circumcisions in the newborn infant in the delivery room immediately after birth. The value of this procedure is due to conservation of time for medical officer and nursing staff, and reduction in the possibility of hemorrhage or nursery infection.

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The use of cortisone and ACTH in rheumatoid arthritis, some types of allergy, rheumatic fever, and several other diseases may create an endocrine disturbance in many of the patients. One aspect of endocrine disturbance resulting from the use of these agents is depression of adrenal cortical function. Hence the anesthesiologist must familiarize himself with the use and abuse of these hormones because it is a fact that patients can reach the operating table particularly in emergencies and many times in elective surgical operations without the surgical team realizing some factors that should be known in advance.

—JOHN S. LUNDY, M.D.
in *Anesthesiology*
p. 376 July 1953

A SIMPLE TECHNIC FOR BRONCHOGRAPHY

DAVID E. THOMAS, L. *1st Lieutenant Colonel* MC USA

EXPERIENCE at various overseas hospitals has revealed that frequently a patient not eligible for evacuation requires a bronchogram for evaluation. Often there is no one available who is capable of performing the technical aspects of the procedure. Actually, with a minimum of equipment, scrupulous attention to detail, and an appreciation of the hazards involved, any physician can obtain adequate bronchograms.

With this in mind, I believe that a complete description of the routine method of bronchography used at this hospital will serve a worthwhile purpose. Its advantages are that (1) a minimum of equipment is needed, (2) no special otorhinolaryngologic training is required, (3) the procedure can be performed rapidly, and (4) tracheal catheterization is not required.

PROCEDURE

Premedication of adult patient consists of the administration of 0.2 gram of secobarbital (seconal) one hour before appointment, and of 0.006 gram of atropine sulfate and 0.64 gram of codeine sulfate 45 minutes later. Nothing is taken by mouth for at least six hours prior to the procedure, and postural drainage on the ward precedes bronchography.

With the physician protected by two masks and the shield illustrated in figure 1, topical anesthesia is obtained with a two percent solution of cocaine in peppermint water. The oropharynx is first anesthetized by spraying with an atomizer. In this clinic a compressed air atomizer is used, but a hand atomizer is an acceptable substitute. The patient holds his tongue with a four by four gauze sponge in the left hand and is instructed to breathe through his mouth. Because the spray will generally cause him to gag, he holds an emesis basin lined with cleansing tissue in which he expectorates, and is supplied with additional tissue with which he wipes his mouth. He is instructed to expectorate, not swallow the medicament. Spraying is repeated until the throat feels numb. A small cotton sponge dipped in the cocaine solution is then introduced for 10 seconds in each pyriform sinus with the laryngeal forceps. Following this step the epiglottis is visualized with a laryngeal mirror, a curved malle-

able silver laryngeal cannula on a 3-cc syringe containing 2 cc of the cocaine solution is introduced over the epiglottis, and the epiglottis is gently drawn forward by the cannula. This impinges the epiglottis against the back of the tongue and exposes the glottis. The patient is instructed to take a deep breath and, when the vocal cords abduct, the solution is injected. This maneuver commonly stimulates a bout of forceful coughing. This step is repeated twice more. If swabbing of the pharynx with a

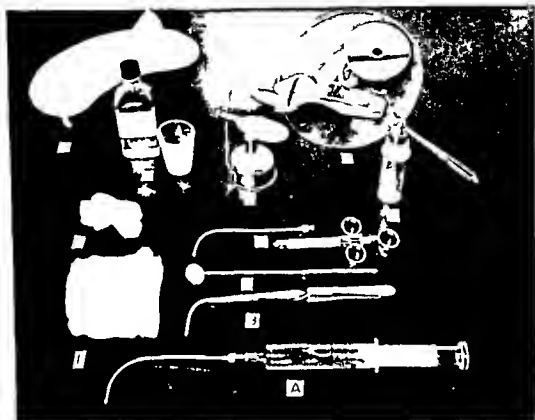


Figure 1 Equipment required for bronchography available through the Armed Services Catalog of Medical Materiel (A) Curved laryngeal cannula, 30-cc syringe and iodized oil (B) Laryngeal forceps (C) Laryngeal mirror (D) Luer syringe control 3 cc. (E) Devilbiss atomizer or medicinal hand atomizer (not shown) (F) Alcohol lamp (G) Two-percent solution of cocaine hydrochloride and medicine glass (H) Cotton swabs. (I) Four-by-four sponges (J) Head mirror and headband attached to locally procured plastic face protector (K) Kidney basin with cleansing tissue.

moist sponge indicates that the gag reflex is still present, the spraying procedure is repeated. It should be emphasized that thorough sensory anesthesia is required in order to abolish the cough and gag reflex. As much as 40 cc of the cocaine solution is sometimes required.

The patient is then placed in a lateral position on an x-ray table which can be tilted. He leans on his elbow on the side to be filled, the head is retracted forward and placed as near the

vertical position as possible the chin is tilted upward and the tongue is drawn forward by an assistant. The patient is instructed to breathe slowly and deeply through his mouth, and under no circumstance to cough or swallow. A laryngeal cannula attached to a 30-cc syringe containing 25 cc of a 40 percent solution of lipiodol is placed by feel over the epiglottis. The lipiodol, which has been chilled for two hours in a refrigerator, is injected (fig 2). It will run through the glottis and trachea to the de-



Fig 2. Injection of lipiodol to the right bronchial tree

pendent bronchi. If the patient does not swallow the injection can be stopped at 15 to 20 cc depending on the size of the patient.

With the lung containing the lipiodol dependent at all times the patient is placed on his side on the x-ray tilt table. With assistants holding him in place the table is tilted almost to the vertical and rapidly returned to the horizontal. This maneuver is repeated twice more with the patient rotated 45 degrees from the initial position both dorsad and ventrad (fig 3).

Posteroanterior, lateral and oblique roentgenograms of the thorax are promptly obtained with the patient standing (fig 4). If bilateral mapping is desired the contralateral bronchial tree is injected lipiodol distributed in an identical manner and posteroanterior and oblique exposures are obtained.

Postural drainage with tussive squeezing is employed while the films are rapidly developed. If inspection of the films reveals an important area of the bronchial tree not outlined, injection is repeated, the patient is positioned as required to ensure filling of the desired segment, and further films are obtained. This is seldom necessary.

Upon return to the ward, postural drainage with tussive squeezing is repeated for one hour.



Figure 3 Positioning and tilting of the patient to distribute lipiodol

COMMENT

Many physicians believe that bronchograms obtained without fluoroscopic control of the distribution of lipiodol are inadequate. It must be admitted that, under fluoroscopic visualization, with the use of a catheter through the glottis, it is possible to obtain the desired bronchograms without using as much lipiodol, and the procedure is more specific. I have had excellent results with the outlined procedure, however, and the necessity of repeating bronchograms because of inadequate filling or other

technical deficiencies has been a distinct rarity. Also the time factor and amount of exposure to roentgen rays are matters worthy of consideration in a clinic with a heavy workload.

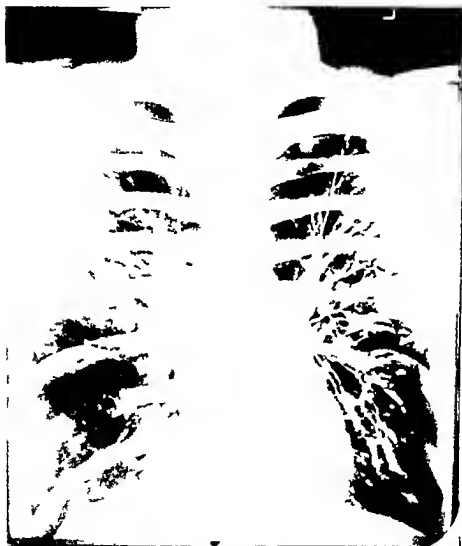


Fig. 4. Bronchogram obtained with described technique. Note extensive bronchitis and excellent filling of the upper lobe.

It is realized that up to 40 cc. of a two percent solution of cocaine for anesthesia represents an excessive dose. Over half of this medicament is exhaled in droplet form or expectorated and the actual amount of cocaine absorbed by the patient is not known. There have been no serious cocaine reactions in the several hundred anesthetizations performed since I have been associated with the endoscopy clinic. No specific therapy has

been required for the few minor reactions which have occurred. A 30-cc syringe of a 2.5-percent solution of thiopeatal sodium (peatothal sodium) and sufficient instruments for immediate thoracotomy are kept on hand in case of a major catastrophe. I have had no experience with combining a detergent, glycerin, and a vasoconstrictor with the local anesthetic and applying the mixture by aerosol spray. Miller and co-workers² reported that this method greatly reduced the amount of the drug needed for adequate anesthesia.

A tilt table is not an absolute requirement for obtaining good results.² Any flat surface tilted to 45 degrees or more, combined with the positioning of the patient so that all segments are filled, will serve the purpose. It should be emphasized that positioning, tilting, and exposing should be done rapidly in order to avoid evaporation. Increasing the viscosity of the lipiodol by chilling is of advantage in this regard.

SUMMARY

A simple method of bronchography described herein can be performed, rapidly and with a minimum of equipment, at remote installations where evacuation is not practical or the indigenous population is being treated. Close attention to the steps of the procedure will result in adequate bronchograms being obtained.

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THE FOREMOST MEDICAL PROBLEM

Although some nations of the world still have pressing problems of communicable disease and life expectancy rates vary from nation to nation, the trend in all nations is to a greatly increased life expectancy—resulting throughout the world in an aging population. As a result, the foremost medical problem in many parts of the world is no longer the communicable diseases which claimed their victims with dramatic swiftness, but the slow, insidious processes of the chronic diseases and the disabilities that they leave in their wake.

—HOWARD A. RUSK, M.D.
in *New England Journal of Medicine*
p. 232, Aug. 6, 1953

PREVENTION OF RECURRENT ORAL VINCENT'S INFECTION

Educating the Patient

THOMAS D. GILSON *Command (MC) USNR*

VINCENT'S infection or "trench mouth" long has been a dental problem in the world's military forces. Prinz and Greenbaum have chronologically related the early reports nearly all of which described outbreaks of the disease in armies. The works of Pindborg¹ and Hester and associates² called attention to the continuing problem of the occurrence of this disease in personnel of the armed services. They as well as Schlager³ believed that the hazard of acquiring this infectious process in its original acute phase is greatly increased while serving on active duty with the military service.

Workers are in general agreement regarding the systemic factors believed to be contributory in the weakening of individual resistance to the invasion of organisms producing the disease. Several of these factors are of such a nature that active duty in the armed services might intensify them to the extent that other things being equal this very intensification could account for the preponderance of the disease in persons in the service. The following appear high on many lists of systemic contributory factors: physical exhaustion and emotional tension, general run-down condition and emotional and physical strains, all of which are conditions frequently experienced by servicemen.

It is also generally agreed that after treatment of the first acute attack of Vincent's infection in spite of the use of various drugs and repeated thorough cleansing of the gingival crevices by both dentist and patient there is still a great likelihood of either a recurrence of the acute phase or a retrogression into a subacute or chronic state.¹⁰

Goldman⁴ stated "One of the most important but least recognized causes for recurrence is the saucer shaped interproximal area resulting from a primary attack. The architecture of the interproximal tissues does not allow for the deflection of food during mastication. Thus with the pecking of food the crater becomes larger and there is a loss of tissue tone resulting in reinfection. This condition can only be rectified by surgery.

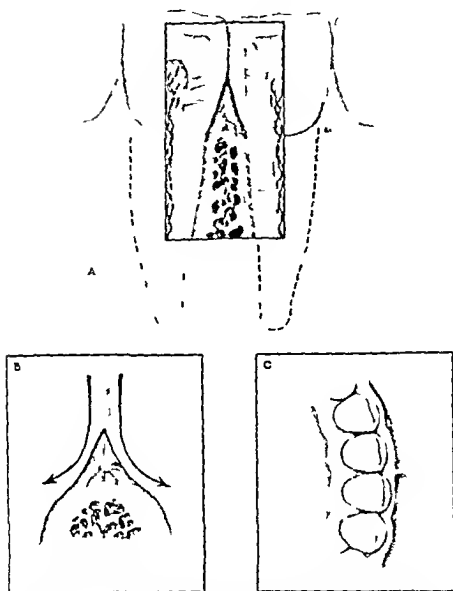


Figure 1 (A) A schematic view of the lower front teeth and gums in a healthy mouth as seen from the front. The cut away area shows the roots embedded in bone with the overlying gum tissue filling the space between the teeth.

(B) A drawing of the same as seen from right angles to view (A) or a section between the front teeth. Left in this drawing is toward the lip and right is toward the tongue. The gum again fills the space between the teeth in this drawing and comes to a sharp peak up to the point where the teeth touch each other represented in the drawing by the white oval immediately above the peak.

The arrows indicate the path of food which slips around this contacting point during eating. Notice that the shape of the gum tissue between the teeth is such that food naturally is shed away from this delicate attachment of gum to root making the area between the teeth relatively self cleansing.

(C) A top view of the lower front teeth.

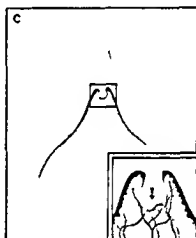
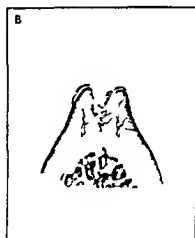
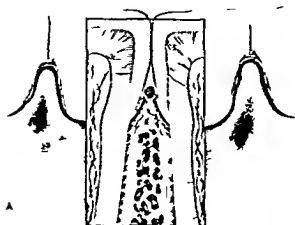


Figure 2 (A) A h m a w mul to figur 1 how t how the me nd tion of ur V e t nf tion or tr h mo h Th mouth ery or the gum hl d ily and the p t nt ha pe l met ll tast h mou h t th time Not that th g ms wh h ca he d s ha eat n wy be t p of the p k of gum is betwee the teeth ad th t the g ms w llen nd d b ov h ne k of the t th

(B) A dr w g of th dise e proc ewed t ght gl to (A) Not c g hat the point of gum that us d fill th p betw e th t th is be g roded w y by th ction of the dis s ge ms

After pope t tme t f th dis n th ur t g the gum w ll heal in d formed w y n n dr w g (C) Th pe k of gum t wh h us d to fill th sp p th ont ctng po nt is changed o that th t p s gon nd up- h p d t p nt

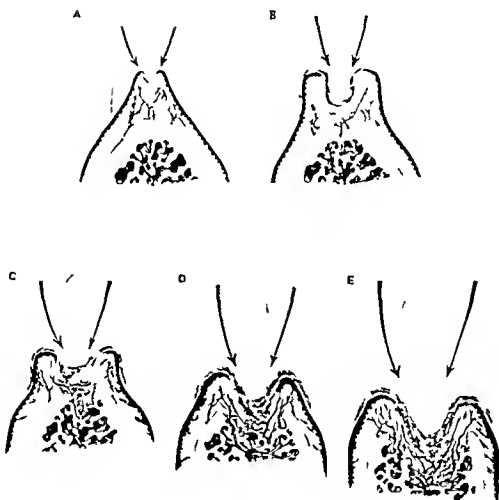
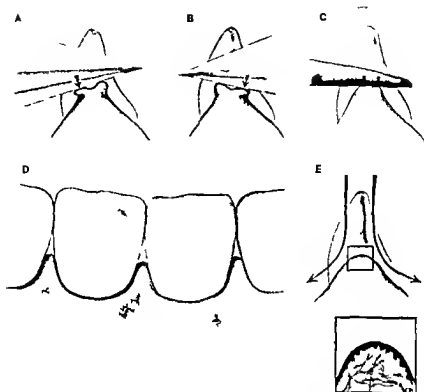


Figure 3 These drawings illustrate the changes in the gums if nothing is done to alter the cup shaped deformity resulting from the acute attack of "trench mouth." The arrows indicate the packing of food into this delicate area each time that it is chewed. This constant packing of food will cause the "cup" to become progressively deeper until the bone is affected. The gums lose their tone and the chance that the trench mouth germs will again invade the tissues is greatly increased. Either another acute attack with soreness and bleeding will occur or the disease will go on in a low grade way gradually destroying the structures with little more discomfort than the packing of food between the teeth will produce.

To prevent either of these forms of relapse from occurring it is necessary for the patient to care for his mouth in a very particular way for several months. The cup between the teeth must be changed into a convex shape again to prevent recurrence of the Vincent's processes which if not prevented will be responsible for the early loss of the patient's teeth.



Figur 4 (A) and (B) illustr t h w bbe epped at d l t m
latoe ho ld be trod ed d ly betw th t th for g th lp f
th p dw fr t the ch k s d (A) d th th t g d (B)
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ommend d Th will q ur t g bly 30 mu t s a dy Ma y p t t
d wh l g th t m latoe

Cns de hl p ur ca be x d o th lp of th p w th th
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Draw g (D) od (E) p ctur th gum me m th lat w th
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Conti nat on of th us f th t k t l th aft meal
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pe od e cour g d t ke p the gum firm nd h althy

Schaffer's¹³ work sheds some light on the character of the "saucer" because in several patients who had recovered clinically, biopsies after treatment revealed areas with incomplete epithelial covering and "microscopic breaks still were present."

Supporting Goldman's contention that surgical intervention is necessary to correct the deformity in the embasure, Eustaco¹⁴ laments the unlikelihood of general adoption of such long operative procedures in British armed forces during the war. This possibility is extremely remote in view of the number of cases occurring, and from my observation of the attitude of many dentists in the service such approaches to correction are the task of a periodontist.

Chace¹⁵ stated the problem and offered a solution more compatible with armed services capabilities when he made this observation: "Architecture of the interproximal tissue is seriously changed so that food particles are not deflected during mastication. Food accumulates in the area and the saucer becomes deeper. *If the bone is not affected, proper contour can be usually restored by packing and the (patient's) faithful use of an interdental stimulator*" (italics added). Kerr and Gileon¹⁶ are of the same opinion.

The purpose of the accompanying figures and their legends is to provide convenient material in printed form for making clear to the patient the importance of his role in reshaping the interproximal tissues to prevent recurrence of the Vincent's disease in any form (figs 1-4).

The patient must be taught (1) to use an interdental stimulator so that he will, over a period of time, produce pressure atrophy of the edges of the saucer on the facial and lingual sides, and (2) to thoroughly cleanse the cervical portion of the embasure after each meal.

The legends are written in lay language in the hope that the illustrations in the article may serve to educate patients. Verbal explanations with the original drawings have been very encouraging, and patient co-operation in self-care procedures has been greatly enhanced.

SUMMARY

This article presents a short justification and plea for the publication of the accompanying schematic drawings and legends for distribution to dental patients as an aid to the prevention of recurrence of Vincent's infection.

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TREATMENT OF GRIEF

It is only rat ly that a doctor is asked to tr at a problem in grief. Our therapeutic emollients are uncertain and tremulously administered. We esc pe if we can. Until the signs and symptoms and the natural course of bereavement are more thoughtfully examined we rem in unable to help in any plan f r a constructive and reasonably happy order of living. Although we may not be able or even invited to carry through to a cure doctrrs may shelter a mind during the first shock of be teavement. Here medicines play a part and the concept of sedation needs to be cleated. Warnings against barbitur m now prevalent in lay writing have become mislead g unless the real use of the drug as a temporary stay on an emotional explosion is explained. In a be wildered and d pleted person it is charitable and wise to subdue the mind unt l thoughts are assembled in a mote orderly fashion. Nor does the need for such an ntetruption constitute a censurable defect in the intellectual structure of a patient. The proper use of sedatives over a period of everal weeks may be a real medical contribution.

—THOMAS N. HORAN, M.D.
 H p H p t a l B l l t n,
 p 124 M y J 1954

RIFLE SLING PALSY

HASCALL H MUNTZ *Captain, MC USA*

RALPH W COONRAD *Captain, MC USA*

ROARY A MURCHISON *Colonel, MC USA*

TRANSIENT peripheral nerve palsies as an occupational hazard peculiar to certain military duties have been described in the past. Examples are bombardier's palsy and palsies from pressure of the shoulder pack in infantrymen. This report presents a series of patients with peripheral nerve paresis in the left upper extremity attributed to the use of the rifle sling during basic training (figs 1-3).

The subjective complaint of the soldier with rifle sling palsy is often the "stocking glove" type of anesthesia observed in a hysterical person. In mild cases, a high index of suspicion and obtaining a careful history are necessary to make the diagnosis. The patient with moderately severe symptoms will present sufficient objective neurologic findings on the first examination to confirm the diagnosis.

Early in 1953 three patients reported to the outpatient dispensary with nearly identical complaints of numbness and weakness of the left arm but gave no history of recent disease nor of other associated systemic symptoms. Neurologic examination other than that limited to the left arm was normal.

A survey of the literature disclosed no previous description of injury due to the use of the rifle sling. Questioning of infantry officers in the training groups was not fruitful in disclosing any known effect of its use on the present or previous groups of trainees. Because of its transient nature and possibly because of its nondescript symptoms the entity had not been brought to their attention.

Medical officers who had served in basic training camps were questioned and were unaware of any nerve palsy of the upper extremities occurring in trainees; however, brachial plexus palsies of "unknown" cause had been observed.

Once this syndrome was brought to the attention of the dispensary physicians, 18 more patients who had reported to their dispensaries without solicitation were quickly diagnosed and referred to the orthopedic clinic of this hospital.

F m U S. Army H sp tal Camp Chaff A k. Dr Muntz ow at 938 H p tal
D Tyl T x.



Figure 1. Right arm in the prone position. For the sake of clarity the patient's right arm is extended forward. It is believed the jacket has a tendency to move the pressure over the axillary brachial plexus by the natural folding in this region.

These patients had one or more of the following objective findings (1) Disseminated muscle group paresis involving those muscle groups supplied by radial, ulnar and median nerves



Figure 2. Right arm in the sitting position.

(2) sensory changes involving cutaneous distribution of the radial, ulnar, and median nerves, (3) occasional vascular and/or nerve phenomena manifested by objective and subjective temperature changes, (4) vasomotor instability manifested by skin



Figure 3. Rifleman in the standing position.

color changes with changes in atmospheric temperature, (5) petechiae, and (6) desquamation of skin at the site of pressure (fig 4)

At the time of the initial examination the paresis had been present from one day to three weeks. All patients recovered fully.



Figure 4. Appearance of arm after removal of sling. Note the squaring of the arm at the site of pressure.

Three patients had complete radial nerve palsy and five had partial palsy involving one or more of the major nerves of the arm (table 1).

Physical findings included well defined sensory and motor changes of the involved nerves. Because the patients were all right-handed the upper right extremity was not involved. The sling applied as illustrated and as described in FM 23-5 Paragraph 87 automatically tightens with continued use. It is well known among firing range instructors that the most important

aid to accuracy is a tight sling. About 500 trainees were observed on the firing line and many were found to have a cyanotic or blanched, and often pulseless, hand and wrist while firing.

TABLE L. *Duration of rifle sling palsy in 18 soldiers from 19 to 21 years of age*

Patient	Nerve involved	Extent of involvement	Time to full recovery (days)
1	Median-ulnar	Partial	21
2	Radial	Complete	3
3	Radial	Partial	5
4	Radial	Complete	7
5	Radial	Partial	7
6	Radial	Partial	12
7	Radial	Partial	2
8	Median-ulnar	Partial	3
9	Radial	Partial	10
10	Median-ulnar	Partial	1
11	Ulnar	Partial	6
12	Radial	Partial	4
13	Radial	Partial	4
14	Radial	Partial	3
15	Median-ulnar-radial	Partial	3
16	Radial	Partial	6
17	Radial	Complete	2
18	Radial ulnar	Partial	3

The soldier photographed here suffered a severe palsy of all three nerves. He recovered in three weeks and we were able to precipitate palsy with a tight sling again in less than one hour, with three-minute breaks every 10 minutes. Recovery from the second episode was nearly complete in four days.

We examined 488 men divided into two nearly equal groups, who had been firing four hours on the 1,000-inch range.

Of these 130 had mild neurologic symptoms consisting of paresthesias. Sixty one had petechiae and six had definite weakness in the musculature supplied by the radial nerve. These men were examined in groups of about 40 in their barracks four and 10 hours after firing. This was done without previous knowledge of the trainees or their instructors, to rule out the possibility of

mass suggestion or any change in firing technic in the various platoons. No significant differences in symptoms were found among the various groups.

All patients recovered spontaneously without treatment.

SUMMARY AND CONCLUSIONS

The findings of paresis or total paralysis of one or more nerves of the upper extremity in a basic trainee who recently has been or is on the rifle training course should suggest the possibility of rifle sling palsy.

Prevention may be accomplished by using a fixed loop sling and by frequently loosening the sling when changing clips or examining targets. Recovery may be protracted if this injury is not recognized early.

ADDENDUM. Since the first was written about 45 months later with the syndrome having been examined.

THE TREATMENT OF LEUKEMIA

The outlook for progress in the treatment of the leukemia's would seem to be excellent. Although it appears unlikely that any marked improvement will be achieved in the results obtained by radiotherapy alone, the many new chemotherapeutic agents which have been developed for the treatment of this disease in the past ten years suggest that newer and far better agents will be developed in the near future. The probable avenues of progress in chemotherapy are (1) the development of new agents with more prolonged therapeutic effect and applicability to a wider spectrum of leukemias and (2) the prevention of the development of resistance to agents now in use. This latter may be accomplished by a better understanding of the fundamental mechanisms of the development of resistance to various chemotherapeutic agents or by the employment of combination therapy using several chemotherapeutic agents simultaneously or combined irradiation and chemotherapy in an empiric attempt to prevent the development of such resistance.

—JOSEPH H. BURCHENAL, M.D.

Chief, New York Academy of Medicine

P 444 J 1954

MEASUREMENTS AND RECORDING OF JOINT FUNCTION

JOSEPH W. BATCH *Colonel MC USA*

MUCH misunderstanding and confusion exists with respect to joint motion, especially what it comprises and how it can be measured and recorded. This is because of the many methods which have been proposed to measure and record joint motion, without due consideration of the anatomic structure and physiologic function of the part concerned.¹⁻⁴

To be of value the system employed must be simple, readily performed, and understood by all. The method which seems to most nearly satisfy these criteria in principle is that described by Cavo and Roberts.⁵ It is this method in general which will be described, illustrated, and elaborated on.

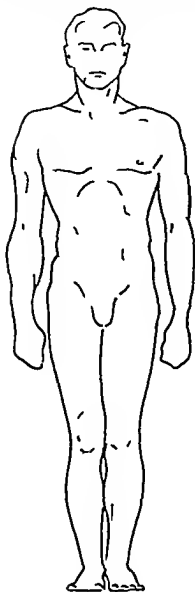
As pointed out by these authors: "(1) All motions should be measured by degrees from a neutral point of zero. (2) The neutral point from which motion is measured must be defined. (3) It is always worth while to mention the comparative motions in the joint of the opposite limb. (4) Angles should be measured with a goniometer or protractor. (5) Motions of joints above and below the affected part should be measured."⁶

A definition of these criteria, the movements to be anticipated the normal range of motion, and the best neutral position for comparison of this range of motion in each joint either actively or passively requires further consideration.

The most logical position of joints to be considered as the neutral point or zero from which motion takes place is the normal anatomic position of these joints. In this position, the person is standing erect with his feet straight forward, the upper extremities are straight by his side. In this position, all joints are in extension which, for practical purposes, will not be considered a type of motion but rather a point from which motion and function take place (fig. 1).

Although there is an average normal range of motion anticipated for each joint, variations exist so that comparison should be made with motion in the comparable joint on the opposite side. The ranges of motion cited in this article are considered average for each joint as stated but may vary slightly from other published

figures. In principle the method employed and the measurements recorded are similar to those on Standard Form 527 Bureau of the



ANTERIOR



LATERAL

Fig. 1 Anatomical position.

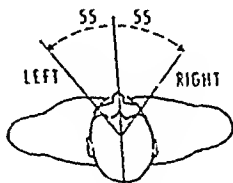
Budget, May 1950. It differs in that each movement of each joint is recorded as such and the average limits of that movement are recorded in a more detailed and complete manner.

Both the active and passive range of motion should be accurately measured in degrees using a goniometer and the results recorded on a form.

Some methods of measuring a type of joint motion include a range greater than 180° . Such a measurement is unphysiologic and consists of combining two separate types of motion. For example, to state that the wrist extends from 110° to 215° is including a return from volar flexion to the extended position of 180° plus including the range of dorsiflexion of the wrist. In

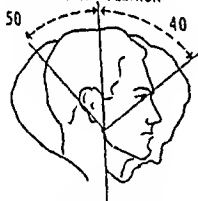


NEUTRAL



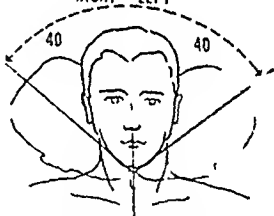
ROTATION

HYPEREXTENSION FLEXION



HYPEREXTENSION
& FLEXION

RIGHT LEFT



LATERAL BENDING

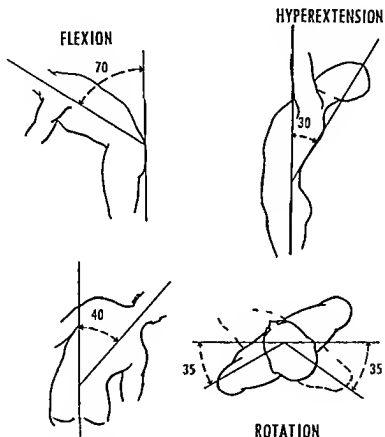
Fig re 2 Average normal range of motion of the neck

like manner to state that the hip extends to 225° is including the range of hyperextension of the hip. When, for one reason or another, a joint cannot return to its normal extended, neutral, or zero position, it should be recorded as so many degrees of permanent flexion, abduction, and so on for each type of joint motion.

NECK

The neutral position for the neck is with the head up and the chin in which corresponds to the extended position of zero degrees (fig 2).

Movements From the neutral position movements which take place are rotation flexion hyperextension lateral bending and circumduction. Rotation to the right and left takes place primarily at the articulation between the first and second cervical vertebrae and to a lesser degree in the articulations between the remaining cervical vertebrae. Flexion or forward bending hyper



LATERAL BENDING

Fig 3 Average normal range of motion of the pin

extension or backward bending and lateral bending to the right and left are a result of the sum of motion in articulations between the skull and all the cervical vertebrae in the sagittal and coronal plane. Circumduction a succession of all the above movements.

Position and Measurement The patient is seated on a chair with his back to the examiner

Rotation is obtained by having the patient turn his head to the right and look first over his shoulder, then to the left and look over the other shoulder. Rotation is measured as the angle formed by a line on the sagittal suture of the skull rotating at the axis of the neck. The average limit of rotation is 55° to the right and to the left.

Flexion is obtained by bowing the head forward and placing the chin on the chest. Flexion is measured as the angle formed by the forward bending of the head from the neutral position. The average limit of flexion is 40° .

Hyperextension is obtained by bending the head backward so the patient is looking at the ceiling. Hyperextension is measured by the angle formed by the backward motion of the head from the neutral position. The average limit of hyperextension is about 50° .

Lateral bending is obtained by bending to the right then to the left, approximating the corresponding ear to the shoulder. Lateral bending is measured by the angle formed at the axis of motion by the new position of the neck from the neutral position. The average limit of lateral bending to the right and to the left is about 40° .

SPINE

The neutral position for the spine is with the patient standing erect evenly on both feet, with knees straight, hips, pelvis, and shoulders level, abdomen in, chest out, pelvis rotated in, and vertebral column, chin in, head up, with a perpendicular line of weight bearing passing through the mastoid process across the greater trochanter and tibial tuberosity to the base of the fifth metatarsal. The lumbar and dorsal portions of the spine are practically flat, although the curves can be identified. There is no marked lateral curvature although, normally, there may be a slight lateral curvature with the convexity to the right. The Achilles tendons are perpendicular to the ground.

Movements From the neutral position, motions of the spine are flexion, hyperextension, lateral bending to the right and left, rotation to the right and left (fig 3), and circumduction. These motions are a result of the sum of motions which take place at the articulations between each of the vertebrae in the sagittal, coronal and transverse planes respectively. Because of this, accurate measurement is difficult. Motions should be compared with the normal for the individual person, considering age and habits. Alterations in the lumbar and dorsal curves should be noted in both the posteroanterior and lateral planes to determine flattening or reversal of these curves.

Position and Measurement Motions of the spine should be examined with the patient in the standing sitting and lying positions The sitting position removes the influence of the hamstring muscles on the pelvis The lying position aids in more accurate localization of pain and an evaluation of muscle tone

Flexion is obtained by having the patient bend forward to the limit of function Flexion is measured by the angle formed by the spine at the axis of motion by the new position of the spine from the neutral position The average limit of flexion of the spine is about 70

Hyperextension is obtained by the patient bending backward to the limit of function It is measured by the angle formed at the axis of motion by the backward bending of the spine from the neutral position The average limit of hyperextension is about 30

Lateral bending is obtained by having the patient bend to the right and to the left to the limit of motion It is measured by the angle formed by bending the spine to the right and to the left from the neutral position The average limit of lateral motion to the right or to the left is about 40

Rotation is obtained by the examiner fixing the pelvis with his hands and having the patient rotate the body to the right and to the left It is measured by comparing the angle made by plane of the shoulders with that of the pelvis The average limit of rotation of the spine to the right or to the left is 35

SHOULDER

The neutral position for the shoulder is with the spine erect and the arms hanging straight down by the sides This corresponds with the extended and adducted position of zero degrees

Movements From the neutral position motions which take place are abduction lateral elevation flexion forward elevation hyperextension internal and external rotation in the neutral position internal and external rotation in abduction (fig 4) adduction and circumduction Movements at the shoulder joint take place between the head of the humerus and glenoid cavity of the scapula together with scapulothoracic acromioclavicular and sternoclavicular motion Once 30° of abduction or 60° of forward flexion is obtained the relationship of humeroscapular motion remains constant of two humeral to one part scapular motion Four degrees of elevation of the clavicle takes place for every 14° elevation of the arm up to 90° and none thereafter About 20° of motion takes place in the acromioclavicular joint throughout the course of abduction The clavicle rotates upward and backward and the scapula downward and outward during abduction At

the sternoclavicular joint, the clavicle elevates 5° , retracts backward 25° , and rotates 50° on its longitudinal axis.

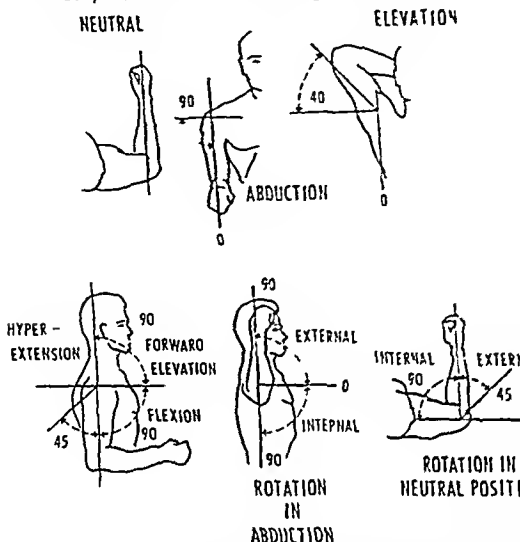


Fig. 4. Average normal range of motion of the shoulder

Position and Measurement The patient may stand erect or seated to examine movement of the shoulder joint. For convenience of the examiner and to evaluate movement in the shoulder, the forearm is flexed to 90° .

Abduction is obtained by raising the arm straight out and from the side and is measured by the angle formed by movement of the arm from the neutral position. The average limit of abduction is 90° .

Lateral elevation is obtained by continuation of the upward movement of the arm above full abduction of 90° to the limit of motion. This motion is primarily a result of scapulothoracic motion. The average limit of lateral elevation is 40° beyond 90° of abduction.

FINGERS

The neutral position for measurement of the finger motion is with the fingers extended (fig 7) Each joint should be measured for flexion and examined for lateral stability Flexion is the only

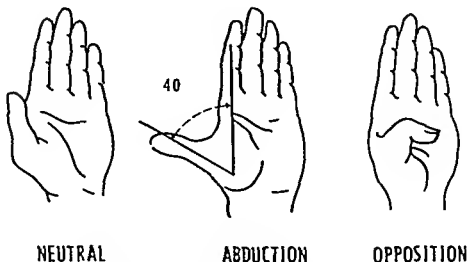
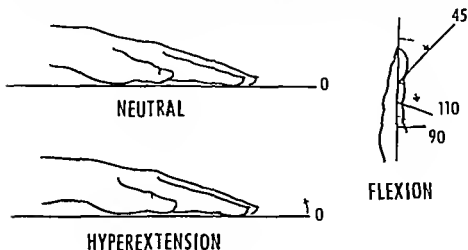


Figure 7 Average normal range of motion of the finger

motion recorded for each joint. The normal limits of motion are 45 for the distal interphalangeal joints 110 for the proximal interphalangeal joints and 90 for the metacarpophalangeal joints. If hyperextension exists it should be measured and recorded.

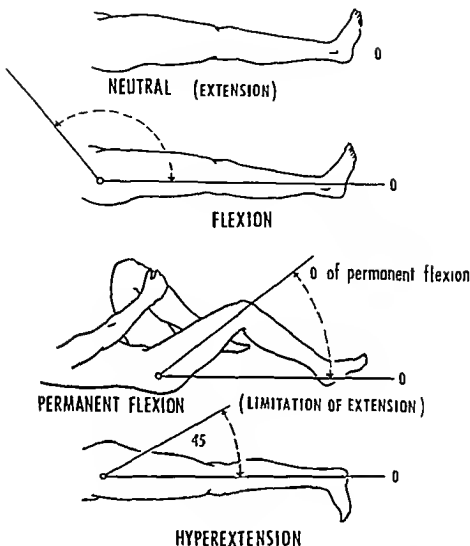


Fig re 8 Average normal

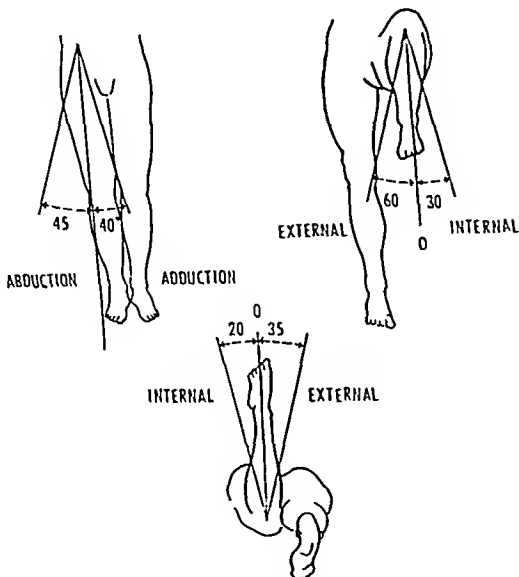
Abduction is obtained either in the lateral decubitus or supine position. The thigh is moved outward from the neutral position. The angle formed by this movement from the neutral position is measured. The average limit of abduction is 45.

Adduction is obtained by moving the thigh across the midline from the neutral position. The angle so formed by this movement is measured. The average limit of adduction is 40.

Internal rotation in extension can readily be obtained with the patient in the prone position. The knee is flexed to 90 and the leg and foot rotated outward. The angle formed by the

ABDUCTION & ADDUCTION

ROTATION IN FLEXION



ROTATION IN EXTENSION

angle of motion of the hip

leg moving from the vertical neutral position is measured. The average limit of internal rotation in extension is 20°.

External rotation in extension is obtained in a manner similar to that for internal rotation except the leg and foot are rotated in ward. The angle formed by the leg moving from the neutral position is measured. The average limit of external rotation in extension is 35°.

Internal rotation in flexion With the patient supine the hip and knee are each flexed to 90°, the leg and foot are rotated outward. The angle formed by the leg moving from the neutral position is measured. The average limit of internal rotation in flexion is 30°.

External rotation in flexion is obtained in a manner similar to internal rotation except the leg and foot are rotated inward and the angle so formed measured. The average limit of external rotation in flexion is 60

Circumduction of the hip is a succession of the above movements obtained by describing an arc with the thigh through the extremes of the various movements of the hip joint.

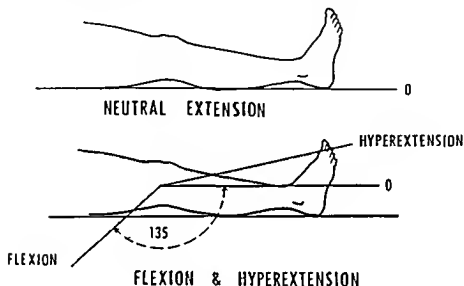


Fig 9 Average normal range of motion of the knee

KNEE

The neutral position for the knee joint is with the leg in a straight line with the thigh in the extended position (fig. 9)

Movements From the neutral position movements of the knee are flexion and hyperextension. These movements occur at the articulation between the femur and the tibia. In addition to these movements lateral and anteroposterior stability of the knee joint should be tested.

Position and Measurement These movements may be measured with the patient sitting on the edge of an examining table or lying supine on the table.

Flexion is obtained by bending the leg backward toward the posterior surface of the thigh. In the supine position this is facilitated by flexion of the hip. The angle formed by the leg moving posterior from the neutral position is measured in degrees. The average limit of knee flexion is 135.

Hyperextension is obtained by holding the thigh firm on the examining table and lifting the leg anteriorly from the neutral position. The angle formed by movement of the leg from the neutral position is measured and recorded. There is normally no hyperextension of the knee joint.

Lateral stability is obtained by moving the leg first laterally then medially from the neutral extended position. Any deviation should be recorded as mild, moderate, or severe. This is a test for the medial and lateral collateral ligaments of the knee.

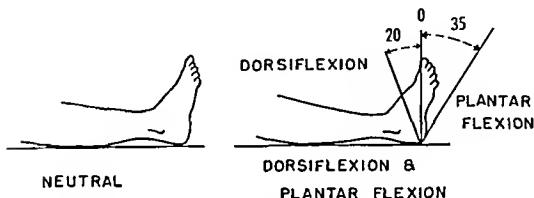


Figure 10 Average normal range of motion of the ankle

Anteroposterior stability is obtained by flexing the knee to 90° to relax the collateral ligament. The leg is grasped and pulled directly anterior. This is a test of the status of the anterior cruciate ligament. The leg is returned to its normal position and the leg then pushed posteriorly to test the stability of the posterior cruciate ligament. Abnormal motion is recorded as mild, moderate, or severe.

ANKLE

The neutral position for the ankle is with the lateral border of the foot at 90° with the axis of the leg and in midposition as regards to inversion and eversion (fig. 10).

Movements From the neutral position the movements of the ankle are plantar flexion and dorsiflexion (extension). These movements take place at the articulation between the tibia and talus and should be compared with the knee in the extended position and with the knee flexed at 90° to rule out limitation of motion due to a tight gastrocnemius or soleus muscle.

Position and Measurement The patient may be sitting or lying supine on the examining table.

Plantar flexion is obtained by moving the foot downward from the neutral position. The angle formed by the lateral border of the foot moving from the neutral position is measured in degrees of

plantar flexion The average limit of plantar flexion of the ankle is 35

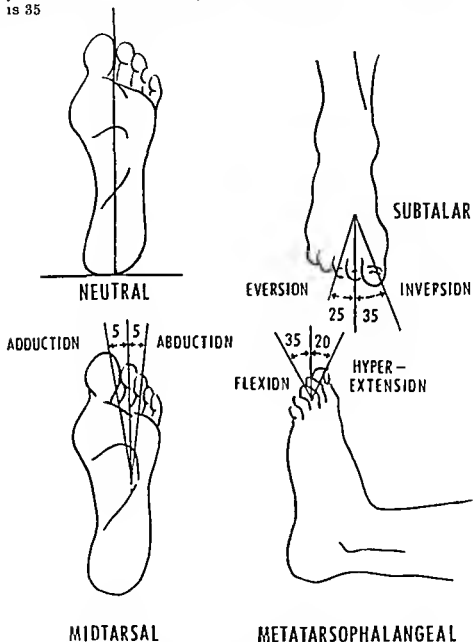


Figure 11 Average normal range of motion of the foot

Dorsiflexion of the ankle is obtained by moving the foot upward from the neutral position. The angle formed by the lateral border of the foot moving from the neutral position is measured in degrees of dorsiflexion. The average limit of dorsiflexion is 20

FOOT

The neutral position for the foot is with the os calcis in neutral position as regards inversion and eversion and with a line bisecting the heels, extending through the second toe perpendicular to a line representing the posterior surface of the heel (fig 11)

Movements Movements of the foot are inversion and eversion which occur in the subtalar joint, adduction and abduction which take place in the midtarsal joints, flexion and hyperextension of the metatarsophalangeal joints, which in the great toe is the most important, and interphalangeal joint motions of flexion and hyperextension which are very difficult to measure

Position and Measurement *Inversion* is the inward deviation of the os calcis which normally is 35° *Eversion* is the outward deviation of the os calcis and can normally be carried to 25° *Adduction* is the inward deviation of the forefoot from the neutral position and normally is about 5° *Abduction* is the outward deviation of the forefoot which is also about 5° Metatarsophalangeal and interphalangeal joint motion is of little importance except in the great toe where, normally, it is 35° of flexion and 20° of hyperextension *Pronation* of the foot is a combination of eversion and abduction which may normally be 15° *Supination* is a combination of inversion and adduction and normally is 20°

GIRTH AND LINEAR MEASUREMENTS OF EXTREMITIES

In addition to measurement of joint motion the length of the extremities should be measured The length of the upper extremity is measured from the tip of the acromion process to the tip of the radial styloid The length of the lower extremity is measured from the anterior superior iliac spine to the tip of the medial malleolus on the same side

Measurements of the circumference of the extremities at prescribed levels should also be performed for completeness of the examination The arm should be measured three inches above the antecubital fossa the elbow at the antecubital fossa, the forearm four inches below the antecubital fossa, the thigh six inches above the superior border of the patella, the knee at the popliteal fossa and the calf six inches below the inferior border of the patella

As a reminder for examiners and for simplification and uniformity in reporting joint motion and measurement of the extremities a form similar to Standard Form 527 is suggested It is recommended that this form be modified to include spaces for recording all movements of all joints, both active and passive, together with the average limit of motion in degrees for these movements A suggested form is shown in table 1

TABLE I A sugg t d form for j t m asur me t

J	M t	A	P	A rag l m t f mo d gr
N k	E			0
	R ta			55
	Flex			40
	Hyp so			50
	L rail bend g			40
Sp ne	E te			0
	Fl xi			70
	Hyp nsio			30
	L l be ding			40
	R tau			35

J	M	L f		A g l m t f m d gr	R gh	
		Act	P		A	P
Sh uld	E ns			0		
	Abduc			90		
	L al l			40		
	Fl so			90		
	F wa d l so			90		
	Hyp nsio			45		
	Adduc			0		
	R bd I te nal			90		
	Ex nal			90		
	R dduc I rn l			90		
	E nal			45		
Elbow	E so			0		
	Fl			145		
	Perma fl so			0		
	Hymer			0		
	Sup na so b nd			90		
	P na hand			90		
W	Ext			0		
	P lma fl so			70		
	Do fl so			65		
	Ulna d la			30		

TABLE 1 *A suggested form for joint measurements—Continued*

Joint	Motion	Left		Average limit of motion degrees	Right	
		Active	Passive		Active	Passive
Wrist (continued)	Radial deviation			15		
	Pronation at wrist			75		
	Supination at wrist			60		
Finger Index	Extension			0		
	Distal IP Flexion			45		
	Permanent flexion			0		
	Proximal IP Flexion			110		
	Permanent flexion			0		
	MCP Flexion			90		
	Permanent flexion			0		
Middle	Distal IP Flexion			45		
	Permanent flexion			0		
	Proximal IP Flexion			110		
	Permanent flexion			0		
	MCP Flexion			90		
	Permanent flexion			0		
Ring	Distal IP Flexion			45		
	Permanent flexion			0		
	Proximal IP Flexion			110		
	Permanent flexion			0		
	MCP Flexion			90		
	Permanent flexion			0		
Little	Distal IP Flexion			45		
	Permanent flexion			0		
	Proximal IP Flexion			110		
	Permanent flexion			0		
	MCP Flexion			90		

Interphalangeal

Metacarpophalangeal

TABLE 1 *As gge t d f r m f j t m e a u r m t — C t d*

J	M	L f		A s l m t f m o d g r	R g h	
		A t	P		A	P
F ng L t l (Co d)	MCP P m a t f l a			0		
Thumb	I p h l n g l Fl			45		
	Perma fl			0		
	M ta po- phal g l Fl			45		
	P m a t fl			0		
	Adduct			0		
	Abduc			40		
	Opp			3 h p f th mb t b f m d- dl f r g r		
Hip	E			0		
	Fl h fl d			120		
	Ka tr ght			80		
	P m a fl xi			0		
	Hyp			45		
	Abd ct			45		
	Add			40		
	R ta fl l l			30		
	te l			60		
	R l nal			20		
	Ex nal			35		
k	F			0		
	Fl io			135		
	P m fl			0		
	Hyp			0		
Ankl	Pla ta fl			35		
	D fl (xt ns)			20		

M t a c r p h a l g e a l

TABLE 1 A suggested form for joint measurements—Continued

Joint	Motion	Left		Average limit of motion in degree	Right	
		Active	Passive		Active	Passive
Foot	Inversion			35		
	Eversion			25		
	Adduction			5		
	Abduction			5		
	Pronation			15		
	Supination			20		
Toes	Metatarsophalangeal Flexion			35		
	Hyperextension			20		

Extremity Length

		Left	Right
Lower extremity	Anterior superior iliac spine to tip of medial malleolus		
	Umbilicus to medial malleolus		
Upper extremity	Tip of acromion to tip of radial styloid		

Circumference

		Left	Right
Arm	3 inches above cubital fossa		
Elbow	Anterior cubital fossa		
Forearm	4 inches below cubital fossa		
Wrist			
Hand	In palm		
	Extremity		
Thigh	6 inches above tibial condyle of patella		
Calf	6 inches below tibial condyle of patella		
Heel	At popliteal fossa		
Ankle			

SUMMARY

The method of recording joint motion described simplifies the procedure by considering only one function of the joint. The extended position is considered the zero and not measured as a

joint function and all motion is measured from this neutral point. Failure to extend to this zero or neutral point is recorded as so many degrees of permanent flexion. The confusion of recording several readings is eliminated for example instead of recording the elbow flexes from 180 to 60° and extends from 60 to 180 it is recorded as the elbow flexes 120 no permanent flexion. In those patients where limitation of motion may exist a report might read the elbow flexes from 20 to 100 20 of permanent flexion. Further the confusion of ascribing more than 180 to any one motion which is not physiologically possible is eliminated. Each functional motion of the joint is recognized and measured.

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NIGHT BLINDNESS

It is important to recognize that night blindness is not a specific symptom of avitaminosis A. The occurrence of this symptom should be an indication for a careful dietary history and examination for other factors which contribute to deficiency. Remember well that the usual complaint of temporary blindness after passing an oncoming car while driving at night is due a thousand times more often to poor eye habits in driving than to deficiency. Show your patient how to watch the right edge of the road, not the lights of the oncoming car. Don't give him vitamins. Bad driving habits will kill him just as quickly whether or not he has a liver full of carotene. Remember too that as people get older their eyes tend to be less efficient. Trying to treat the normal decline of age with vitamins is interesting, expensive, useless, and done too often. In deficiency, night blindness does not seem to occur until liver stores of the vitamin are exhausted.

—PAUL WILLIAMSON, M. D.

Cradford, Maryland, July 21-22, 1954

DR JOSEPH WARREN, PHYSICIAN AND PATRIOT

CHARLES H BRADFORD M. D

IT seems unfortunate that Joseph Warren is remembered so vaguely today and that his associates are largely forgotten. Those who recall that Warren died heroically at the battle of Bunker Hill will perhaps fail to realize that he occupied, at the time, the position of the leading medical practitioner in Boston. Even fewer will appreciate the extent of his influence in the political field. Second only to Sam Adams he organized, led and controlled the popular movement of resistance to British oppression. Together they exercised such diplomacy, courage, and skill that their efforts played a large part in precipitating the American Revolution. These three aspects of Warren's life—military, medical, and political—are illustrated dramatically by his activities in the last 24 hours before he was killed, as related by his nephew, Dr Edward Warren. Though unconfirmed and possibly inaccurate, the incidents are characteristic enough to be worth repeating. On the night before the battle it is known that he presided over the Provincial Congress which met in Watertown. On the following morning he is said to have attended an expectant mother; labor pains were slow, however and he left the delivery to an assistant, after telling his patient that he must go to Charlestown "to get a shot at the British." Because of this medical call, it is supposed, he was late on the battlefield but not too late to refuse a major generalship and fight as a private in the front line, and not too late to stand fast when defeat overwhelmed his comrades and to meet death with unwavering defiance.

Warren began his medical career in 1760, under the tutelage of a prominent Boston physician Dr James Lloyd, who in turn had been trained in London with William Hunter. Since no medical school was available in Massachusetts before 1783, the apprentice system took its place during these earlier days. In some respects this method of teaching offered advantages that have never since been duplicated. Through it, the preceptor, in addition to dispensing his *knowledge*, could impart a share of

Manuscript of Orthopedic Staff Boston City Hospital Boston, Mass.
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his *wisdom* which the pupil might not absorb in any other way For the technical subjects teaching was more than adequate Compounding of drugs for example served as instruction in pharmacology in a way superior to any modern pedagogy Substituting on calls doing dressings and covering minor emergencies gave the apprentice a graded sort of clinical experience that could hardly be surpassed Didactic instruction came when he was accompanying the doctor on visits and discussing cases with him—equivalent to present ward teaching Anatomy was learned by dissection when and where possible Body snatching was the recognized method of obtaining anatomic subjects since no legal method of obtaining bodies had been established

In 1764 Warren aged 23 began practice for himself rapidly advancing to eminence A major reason for success lay in his extraordinarily appealing personality and character His portrait, by Copley now hanging in the Boston Museum of Fine Arts shows a young man of a pleasing appearance fair complexion and athletic physique His features tend to corroborate contemporary claims that he was the handsomest man in Boston of that day Unfortunately Copley seldom succeeded in catching an inward glimpse of the spiritual temper of his sitters Here the somewhat dull expression of the painting fails to suggest the fervor and intensity of Warren's emotions or the lion-like courage that his actions demonstrated

One of his outstanding characteristics was his rare personal magnetism which drew all men to him He held for instance the intimate and confident friendship of rigid puritanical John Adams and at the same time shrewd hard-headed Sam Adams loved him more than any other man Even a man as remote in temperament as Benedict Arnold idolized the person and the memory of the great patriot Still further evidence of Warren's unique capacity for evoking friendship was demonstrated by the commission he received in 1769 from the Grand Master of Masons in Scotland, appointing him the first Grand Master under the Scottish Charter in America Combined with this personal attractiveness Warren possessed almost limitless energy Up to the last few months he seems never to have forsaken or neglected his professional duties Only physicians perhaps can appreciate how absorbing the responsibilities of practice are Yet on top of all these Warren beaped an endless load of civic social and patriotic activities that would have overwhelmed an ordinary man Through the stormiest trials he carried these tasks with a grace and charm of manner that never betrayed the irritations or frustrations of fatigue Two other endowments gave Warren particular force a clarity of intelligence that shone like a light through the perplexing problems of his time and a spiritual intensity that burned like fire in the face of oppressive dangers that most men would have shunned

Having won success in practice, Warren was generous in sharing it with the group of apprentices who soon applied to serve under him. They were men, in themselves, whose careers were to prove most interesting. One was Dr. Samuel Adams, son of the great political leader. Another was William Eustis, who



Joseph Warren as an officer in the Revolutionary War from an engraving by Alonzo Chappel from his painting n 1861

served throughout the Revolution as an army surgeon and who eventually took up politics and finally became Governor of the State. John Warren, 12 years younger than his brother, was from a medical standpoint the most successful of his apprentices. He, too, served with the army in a number of campaigns, and then returned home in 1777 to direct a military hospital, which was located in a pasture in the West End of Boston, close to the present site of the Massachusetts General Hospital.

In addition to these apprentices the contemporary associates of Joseph Warren formed an interesting group. Three in particular deserve mention. Dr Bulfinch attracts notice only as a father of Charles the great architect who designed the Massa-



Warren

A engraving of Joseph Warren by Thomas Hollman from the full length portrait by John Singleton Copley. Facsimile Hall Boston.

achusetts General Hospital and the State House and who completed the design for the Capitol in Washington originally worked out by Hallet Thornton and Latrobe. The father was a successful practitioner but something of an individualist. His charge for midwifery was 42 shillings and he refused to join the Boston Medical Association, which regulated the fees of its members,

because this organization set the charge exorbitantly at 48 shillings. Far more important in Joseph Warren's life was John Jeffries, a Boston man of about his own age, who had carried out his medical studies in London and then returned to practice in Boston. Because of his British affiliations Jeffries remained a Tory, but this apparently did not disturb his personal relations with Warren. At Bunker Hill Jeffries accompanied British officers immediately after the battle, and it was he who positively identified Warren's body before its hurried burial. Instant death had been caused by a bullet that shattered the skull. After the British evacuation of Boston, almost a year later, when the patriots' bodies were disinterred for reburial, another positive identification was required. It was carried out by Paul Revere, who was able to recognize his own handiwork in a tooth he had made for Warren.

An appraisal of Joseph Warren's political activities would require far more space than is permitted here. In general, his efforts may be divided into three major phases: as propagandist, as legislative-executive, and as a man of action. In the first respect, he was tireless. Year in and year out, for a decade his writings held the Tory leaders continuously on the defensive, and at the same time they cultivated and built up a spirit of patriotic enthusiasm among his compatriots. As early as 1768 Warren wrote such a convincing denunciation of Tory blunders and abuses that the Royal Governor, Bernard, in a fit of indignation dissolved the patriot legislature because it had failed to suppress papers of this sort. At the height of the crisis in 1774, Warren composed the masterly Suffolk Resolves. These were transmitted to Philadelphia for consideration by the first Continental Congress. The straightforward hard-hitting language astonished that assembly. "It is tantamount to a declaration of war," one of the more timid members objected. But its sentiments were expressed with such simple eloquence that they suggest the grand diction of the Declaration of Independence which followed a year later. A brief sample deserves quotation.

To us, our venerable progenitors bequeathed the dear-bought inheritance of liberty to our care and protection, they consigned it and the most sacred obligations are upon us to transmit the glorious purchase unfettered by power unclogged with shackles to our innocent and beloved offspring. In a cause so solemn our conduct shall be such as to merit the approbation of the wise and the admiration of the brave and free of every age and of every country.

Most impressive of all Warren's appeals was his oration in the Old South Church a month before the battle of Lexington and Concord. As one passes that building today, one can see the great window behind the pulpit where he made his entry. Be-

cnuse the hall below was too tightly jammed by the throngs of people to allow him passage he came by ladder through the window Three hundred British officers in their scarlet coats had gathered at the front of the hall to overawe and intimidate the speaker In fact it was stated on the authority of Hutchinson that some of this group seriously considered assassinating Warren Rumors also circulated that all the patriot leaders appearing here would be arrested and shipped to England for trial as traitors This was, as a matter of fact the intent of the British Ministry but General Gage hesitated to carry it out knowing the violence of public reaction that could be expected It was here on a similar occasion two years before that Warren had coolly dropped a white handkerchief on the pistol of one officer who pointed it up at him Again thoroughly undaunted Warren exhorted the Parliamentary leaders to desist and warned Britain of the danger that would follow any further aggressions against the colonies Unfortunately his well reasoned arguments like the great rhetoric of Edmund Burke failed to penetrate the stolid stupidity of England's ruling class

As a legislative-executive Warren's achievements have passed more or less unnoticed although they equal his other feats and in some respects exceed them It must be remembered that after the battle of Lexington and Concord there was as yet no Declaration of Independence and therefore the Royal Governor still retained his full executive powers In the absence of any other legally constituted authority government might easily have degenerated into mob rule This was just what the Tories had predicted would follow in the wake of the revolutionary movement The patriots avoided such a disaster by electing their own "congress" of which Warren was president and by delegating its assured powers to a committee of public safety of which Warren was chairman Thus during the two months between Lexington and Bunker Hill nearly everything that had to be done required Warren's initiative Warren's judgment and Warren's decision In this interval an army of 8 000 undisciplined country men had assembled on the outskirts of Boston They must be fed sheltered drilled and furnished with arms Ammunition must be supplied Tactical plans must be considered and approved In addition the problems of the civilian population must be regulated a large number of refugees from Boston must be housed and cared for the support of communities ruined by oppressive British legislation must be provided and order must be maintained Public relations especially with the other colonies were of great importance and must be handled with extreme delicacy and tact It is no exaggeration to say that all these problems came to Warren's hands and with magnificent capability he met and overcame them one by one In two short months the rustic farmers and tradesmen were molded into ele-

ments of an army, rudely equipped and sent to the great encounter at Bunker Hill.

Above all else Warren preferred the few states that he devoted part of every day to his cause. He had often declared his cause he held sacred. This seemed of his speeches he had asked character is the prize, who would shun the waste one coward thought on life? not grow unnaturally in Warren's had heard his father remark, "I would rather than that he should be a coward." captured in the Deerfield Indian the way to Canada before his no pacifist tradition or timid complex then, that when the first shots Warren, who had the night before William Daves with messengers of to engage in the combat. He was who came from Roxbury, and With characteristic disdain for self to the British fire so recklessly away a lock of hair that he wore ear. This close escape failed to reported that he engaged in every up to the Battle of Bunker Hill.

From such venturesome exploits, or thoughtless firebrand who placed a life but this was far from true literary skill, and his scientific the idea. By nature he was deeply tributed to him an unsurpassed social position brought him family affairs were more than early and was the father of interrupted this domestic joy 1773 but subsequently he Scollay and was thought to be death. Thus having already was faced with no obstacle the everything a man might do.croft remarked "the future Why then did he needlessly, protests of his friends, through battle? The question can bring

One possibility is that the moment of combat, as one of

to this and healing will the wound-om neces-
which may be not care for the physician may military surgeon be awaiting his the most for the erefore depends This proce-urgeon present, is in of evacuation ch patients require osuscitation before treatment because

the case. Perhaps as often happens the battle tensions that grip men under fire superseded his instincts of self preservation. He himself had once expressed something of this inward fury.

They say we will not fight, he remarked and added, 'Would to Heaven I might die knee deep in their blood!' Or possibly, with his keen political intuition and passionate devotion, Warren foresaw that the inspiring example of his courageous death would contribute more to the young and untested revolutionary cause than anything he could give it in life. Very probably it occurred to him that the banners of insurrection must be deeply colored in the red dye of mortal sacrifice before they could lead the crusade for human liberty to a triumphant end.

PREVALENCE OF DIABETES

The number of diabetics in this country has been estimated to be about 2 000 000. Approximately 1 000 000 of this number are aware of their condition, leaving another 1 000 000 unknown diabetics. Estimate has also been made that around 4 500 000 of the present population of the United States eventually will become diabetic. Results of this survey and a survey done at the University of Southern California seem to indicate that there are approximately six or seven diabetics in each 1 000 college students who are the usual age of freshmen and new students.

Unless diabetes mellitus is found and treated in its early stages such complications may occur as retinitis, arteriosclerosis with resulting coronary thrombosis and gangrene, coma, malnutrition, cataract and diabetic neuropathy. The asymptomatic normal appearing diabetic person is not free from the progressive degenerative pathologic changes which bring about these many complications. For the sake of the patient, diabetes must be controlled either by insulin, strict diet, or by both insulin and diet.

—WILLIAM E. TAYLOR, M.D., et al.

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GENERAL PRINCIPLES OF MILITARY SURGERY

WARNER F BOWERS *Colonel MC, USA*

THE CONCEPT that military surgery is identical with civilian care of trauma has been fostered, and while in general there is a similarity, certain very distant differences exist. If one were required to epitomize military surgery in one sentence, it might be stated as follows: Do the most good for the greatest number at the right time and in the proper place. If all of the ramifications and connotations of this statement were well understood no further discussion of the subject would be required.

Good military surgery is not a makeshift or make-do but embraces good clinical judgment and advanced technical skill with the modifications required by the time and space factors which are interjected by the military situation. All casualties must be treated correctly and with good judgment, even under the most adverse physical conditions such as mountainous terrain, absence of roads, one-way bridges, mud, or desert. Naturally, military necessity is of prime importance and winning of the war is a paramount requisite. Ideal surgical management must conform to this necessity even though it may mean interference with wound healing. In rare instances it may mean that an ordered evacuation will cost lives, and in still rarer instances it may mean that the wounded must be abandoned on the battlefield. These are stern necessities which must be faced distasteful as they may be.

An essential dictum of military surgery and one which may be difficult for civilian physicians to grasp is: Do not care for the one at the expense of the many! While a civilian physician may spend all night with one seriously ill patient, the military surgeon must consider the fact that 50 casualties may be awaiting his care and he must budget his time so as to do the most for the greatest number. Success of military surgery, therefore, depends in large part on proper triage or sorting of patients. This procedure, accomplished by the most experienced surgeon present, is repeated at each medical installation in the chain of evacuation in order to make three decisions. First, which patients require immediate care, which require a period of resuscitation before definitive care, and which have no priority for treatment because

of the essentially fatal nature of their wounds second which patients can be returned to duty locally keeping in mind that the mission of the Medical Service is to conserve the fighting strength third which patients require evacuation further to the rear for more skilled or more extensive care

MEDICAL ECHELONS

Because casualties are evacuated through a chain of medical installations it is obvious that some division of labor is necessary and some policy must be set up stating what functions each echelon will perform This echeloning of medical care has at least three main objectives in correlation with proper triage First echeloning assures early care for the most serious cases those classed as nontransportable being treated within the division area Second it assures the maintenance of sufficient empty beds in each installation to take care of tomorrow's fresh casualties This means that after properly performing its allotted function each installation disposes of the patients as rapidly as possible Third it prevents evacuation of lesser injuries by stopping the rearward movement of casualties who require no further care and who may therefore be capable of going to duty locally within the prescribed evacuation period This helps to conserve fighting strength keeping in mind that soldiers evacuated beyond the division area have a decreasing prospect of returning to duty with their outfits

THE SURGICAL TEAM

The military surgical team is a large one embracing all echelons from the aid man on the field to the surgeon in the general hospital Members of this far flung team care for the same patients successively in point of time and space The military surgeon depends on the next forward unit for proper initial care and evacuation and on the next rear unit for proper further care and disposition The military surgeon of necessity therefore cannot follow his patient to completion but rather he performs his allotted function and passes the responsibility for further care to his confrere in the rear Were it not for the fact that military surgeons are human such a system would be ideal because here there is no need to struggle to get patients there is no competition except for the best possible results and each man can be proud of the work done by other members of the team to the front and to the rear This teamwork allows the utilization of surgeons with incomplete training because only the skill and technical knowledge required at his echelon of assignment is needed and this can be mastered quickly by a partially trained man Fortunately it is not necessary for each military surgeon to be skilled in all procedures from resuscitation to reconstructive plastic and orthopedic operations In such a system overall guidance is given by traveling

consultants who promulgate policies of treatment and bring follow-up information. Only in this way can the young surgeon learn what has happened to the patients whom he has treated and evacuated. By this means he gains confidence in himself or is afforded the opportunity to profit by his mistakes before too many casualties have passed through his hands.

DIRECTIVES

From the foregoing, it is apparent that directives must be issued, stating what procedures will be accomplished at various echelons and occasionally directives must be issued stating what technical procedures are acceptable. Civilian doctors must learn the necessity for this and must realize that such directives are not pure whimsey. Procedures such as primarily closed-flap amputation stumps, although suitable for university hospital work, have no place in battle casualty work and similarly, loop colostomies with incomplete division may be sufficiently diverting for temporary civilian use but may be entirely unsatisfactory for a long evacuation to a general hospital thousands of miles away. Because doctors are individualists and resent being told how to treat their patients such technical directives are kept to a minimum consistent with good results. The eager young surgeon who does too much at his echelon may make patients nontransportable who should be evacuated and, by doing too much or too complicated procedures he may deny time to other patients who need his care. Furthermore he slows the chain of evacuation and keeps too many beds full in his installation so that there may be insufficient empty beds for the next day's casualties. Such a situation may be extremely serious from the military standpoint.

TRANSPORTATION

All possible modes of transportation are used in the evacuation of patients. Walking wounded tend to follow natural lines of drift, assisting each other or even using the pickaback method. Litter carry is extensively used in forward areas but may be very wasteful of personnel—as in Korea where four or eight bearers sometimes were needed for each litter because of the difficult terrain, long haul, and human fatigue factors. Small boats and local carts augment jeeps and tanks as makeshift ambulances. Even the light liaison planes are used on occasion. The helicopter has become an integral part of planning for evacuation and the story of its use in Korea is now well known. Field ambulances and railroad trains still play their customary role even though airplanes have become commonplace. Ships still play a minor role in Army circles where they function largely as sea ambulances in contrast to Navy usage where they function as general hospitals. The ready availability of empty airplanes is not always helpful for several reasons. First such ready availability may cause patients to be evacuated

too soon. Second because there is a tendency to hold those who are seriously wounded for further observation it may cause evacuation of the less severely wounded who might have been able to return to duty locally. Next it may be that patients will be started on a long trip which will keep them in transit at a time when some definitive procedure such as wound closure should be carried out thus delaying convalescence. Finally it must be remembered that most available planes are cargo carriers going back to their base of origin and are not under medical control. Therefore patients evacuated may end up in an area far removed from a special treatment center.

MEDICAL INSTALLATIONS

A brief recapitulation of the functions of various medical installations seems indicated at this point. The battalion aid station is concerned with first aid and resuscitation including maintenance of airway control of hemorrhage application of splints and dressings administration of narcotic for pain relief the tetanus immunity booster dose and initiation of chemotherapy infusion of blood plasma or volume expander and initiation and transmission of proper records. The collecting station serves as an ambulance relay post and the clearing station is responsible for proper sorting of patients and treatment of minor injuries. Definitive care is given in the mobile army surgical hospital (MASH) to nontransportable wounded in the division area including unconscious patients and those with extensive burns some major amputations thoracoabdominal and cranio-cerebral injuries wounds of the genitourinary tract and the spine injuries to major blood vessels and perineal rectal area and penetrating wounds of the abdomen. After definitive care these patients together with patients with lesser injuries who have bypassed the MASH are sent to the evacuation hospital which in some instances may function as a MASH although usually less mobile. General hospitals serve to give rehabilitative and reconstructive care. In general, it should be realized that the closer the hospital to the fighting lines the higher the case fatality rate because more fatally wounded will live to reach it. The maximum forward location is where the greatest number of casualties can be saved with the least danger from enemy action. Any casualty dying after reaching the first medical installation (Bn Aid Sta) is said to have died of wounds (DOW) as compared to those who die before that time who are referred to as killed in action (KIA). Consequently within reason the higher the DOW rate the lower the KIA rate.

Skilled professional personnel in scarce categories are conserved by the use of specialty teams and the establishment of specialty centers. While this system is subject to abuse it is easier to assemble patients with similar injuries for physicians in

scarce categories in a few places rather than to try to teach large numbers of surgeons the special skills needed in their care. A prime example is the field of neurosurgery.

SUMMARY

All efforts are aimed at conservation of the fighting strength by doing the most good for the greatest number at the right time and in the proper place. Each military surgeon must be trained to know his proper niche and to perform his allotted function there to the very best of his ability, trusting in his fellow members of the team to front and rear to do the same. This applies to all, from the soldier in the front line who helps bandage his wounded buddy to the Surgeon General who has over all responsibility for the supervision of the entire medical service.

THE CONSULTATION AND PROFESSIONAL ETIQUETTE

Time was when a consultation was just that—in the Websterian sense a deliberation of two or more persons. An hour was agreed upon at which the physicians would meet and in no instance would the consultant see the patient before the arrival of the attending physician if the latter were not at the scene first. Somewhere this genteel deportment has been lost in the hurly burly of modern living along with many of the gracious customs of the leisurely times which preceded our own. And not may it be said necessarily to the benefit of the patient or the doctor.

Not two days ago a confrere related the story of a patient who had seen two consultants. Each plus the attending physician had prescribed thyroïd without knowledge of the other prescriptions.

Indefensible? Perhaps, but it points up a reasonable desideratum: the need of specific instructions in the referring of patients. Is this patient referred for examination and recommendation or for examination and continued care? The specific intent of the referring physician is often unclear to the consultant. He would much prefer that it be sharply defined.

An adaptation of the amenities of an earlier day will recapture the dignity which was lost when doctors began to request their consultations as they passed in the hall. Say, Jim, see Mrs. Jones in 421. Will you? And leave a note on the chart.

—LOUIS J. BAILEY, M.D.
in *Deloit Med. cal. N. ws*
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stressors of the winter months. Peace talks began in July and the falling off of the casualty rate is presumably due to this, though there was still considerable patrol activity and from September there was a definite increase in mortar and abell fire.

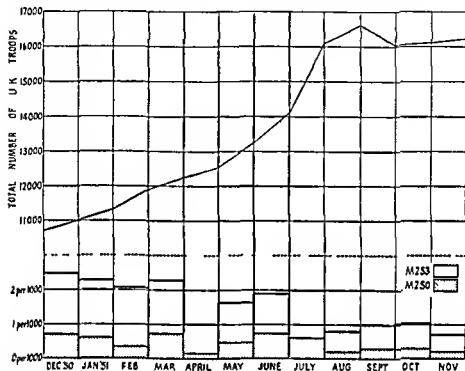


Figure 1 (A) Graph showing psychiatric casualties per 1000 soldiers each month. The upper level of each block indicates the total psychiatric loss. The shaded area presents those soldiers evacuated from the theater (M250). (B) Above this appears a graph representing the total number of U.K. personnel in the theater each month.

During the year December 1950 to November 1951 there was considerable movement of troops in and out of the theater and therefore the total monthly figures of troops reckoned as being in the theater must be taken as being below the total number who could have been potential casualties. For example the 28th Brigade was replaced in April by battalions from Hong Kong and the 29th Brigade was being replaced during the October-November period.

It is obvious from these figures that the loss of manpower due to psychiatric breakdown was negligible and presented no major problems to the administrative authorities. The writer has not at hand for comparison the exact monthly casualty and sick rate resultant from surgical and medical breakdown but through observations and experience in the routine duties of orderly medical officer admitting convoys of patients directly from the battle

front, the proportion was roughly one psychiatric casualty for every 20 wounded or sick.

Some 275 cases from the Australian, Canadian, New Zealand, Indian, and South African members of the Commonwealth forces were interviewed. The personnel from these countries were almost entirely volunteers and together with some first-class material a considerable number of inadequate psychopaths and hysterics were included, whose tolerance for combat, hardship, and boredom was low. It was clear that their retention in the force would be detrimental to the morale of their particular group. Many had a previous (but undisclosed on enlistment) psychiatric history, a few members were even in receipt of pension for their "disability." The following is an analysis of all non U K members of the Commonwealth force who were interviewed.

TABLE 3

R T U	M2S3	M2S0	Total
138 (50 percent)	33 (12 percent)	104 (38 percent)	275

The combined number of non U K troops in the Commonwealth units is not accurately available, but it would be fair to estimate it at about one-quarter to one-third of the total force. The percentage psychiatric breakdown was therefore considerably less in U K elements. This point is brought out not as a claim for superiority of any one member but to illustrate the very real importance and economy of psychiatric screening and personnel selection.

TREATMENT

Apart from continuous narcosis and abreactive therapy no other physical methods of treatment were used. The technique and management of these are well known and will not be given here. Ab reactions were largely confined to patients presenting hysterical symptoms, and showed some quite dramatic "cures" which in variously enhanced the reputation of the operative psychiatrist. Reassurance, suggestion and an appeal to the soldier's sense of duty both to himself and, often more effective, to his unit are simple methods of psychotherapy which, despite an understandable scepticism because they are "simple" methods, give better results than might be expected. Psychotherapy at a "deeper level" was reserved for severe neurotics who, if recommended for evacuation to England, were confronted with a few weeks delay. An alleviation of symptoms to some extent was usual, and any relevant psychopathology was forwarded with the patient's documents for the attention of the military psychiatrist at Netley.

were in good repair with a partial bridge. The chest was symmetrical with good and equal expansion bilaterally and no splinting. The lungs were clear to palpation and auscultation. Examination of the heart revealed no abnormality. No masses or tenderness were felt in the abdomen. Examination of the genitalia revealed a soft, cordlike mass in the left scrotum. The left testicle was thought to be slightly enlarged; there was no tenderness. Rectal examination was negative.

Laboratory Findings: After admission to the hospital, tuberculin skin tests (PPD)—first and second strength, histoplaemin and coccidioidin skin tests—were all negative. Three sputum studies for tumor cells were reported as negative. Urinalysis revealed a specific gravity of 1.015, negative for albumin and sugar, and a rare white blood cell per high power field.

The blood cell count revealed 8,000 leukocytes per cu mm, with 64 percent neutrophils, 33 percent lymphocytes, and three percent monocytes. The erythrocyte count was 4,890,000 per cu mm, hemoglobin 14.0 grams per 100 cc, sedimentation rate 8 mm in the first hour. The hematocrit was 44 percent. Serum total protein was 6.50 grams per 100 cc, albumin 4.48 and globulin 2.02 grams per 100 cc. A flocculation test for syphilis was negative. A bromsulphalein test revealed no dye retention. Serum bilirubin was reported as 0.0 mg per 100 cc in one minute, 0.2 mg per 100 cc total. Circulation time with ether was 0.6 second.

A posteroanterior roentgenogram of the chest revealed a mass in the left hilar region. The patient had a bronchoscopic examination at which time the endoscopist reported the carina to be pulsating more than usual; however, it was in the midline. He also reported an extrinsic mass partially occluding the orifice of the left main bronchus. There was no evidence of an endobronchial lesion. No specimen for biopsy was taken. The left main bronchus was patent and normal below the area of this extrinsic mass.

Fluoroscopic examination by both the chief of radiology and the civilian consultant revealed the left hilar mass to transmit pulsation. An expansile type of mass could not definitely be ruled out; therefore, an angiocardigram was performed using a 70 percent solution of sodium acetrizate (urokon) and making films at four, eight and 12 seconds. The radiologic report was the lesion in the left hilus is unrelated to the vascular system *per se*, except that it may be directly contiguous with it.

Urologic consultation was obtained concerning the left testicular abnormality. It was the opinion of the urologist that the testicle did not contain a tumor but that the abnormality was due to an enlarged and inflamed epididymis.

The patient was seen in consultation by the thoracic surgeon and the civilian consultant in thoracic surgery. On 17 December 1953 a thoracotomy was performed on the left side.

DISCUSSION

Doctor Beard: We shall go through the summary of what I think are the important points noted in the protocol that we can use to attempt to arrive at a diagnosis. This is a 39-year-old white male who developed a vague feeling of pressure over the left anterior part of the chest. I presume that the onset was not sudden and the pain was not severe because we do not have a definite date of onset. Associated with this vague feeling of pressure in the left anterior chest was a soreness on motion in the left shoulder. There were no associated pulmonary symptoms and particularly no cough, dyspnea, hemoptysis, or fever. This was a relatively asymptomatic lesion. A roentgenogram of the chest at that time showed an abnormality in the left hilar region. In the past history there are three points that may have some bearing upon the differential diagnosis. The patient was stationed in Japan where tuberculosis is quite common. He also has been stationed in Oklahoma and central and south Texas and Nebraska. Oklahoma and Texas have endemic areas of coccidioidomycosis. Nebraska, Oklahoma, and also to some extent Texas are more or less endemic areas for histoplasmosis, which might come up in the differential diagnosis. The remainder of the past history apparently has little connection with the present illness. There was a bilateral vasectomy in 1948 which may have some bearing upon the testicular findings as we will note later.

In the physical examination most of the findings are significant because of their absence. There was no weight loss and no cervical lymphadenopathy. The question of lid lag will have to remain questionable as to significance even if present. The lungs were clear. There was a soft cordlike mass in the left scrotum and the left testicle was thought to be enlarged. This would make us consider metastasis from a testicular tumor as a possible explanation for the hilar abnormality.

The laboratory findings again are significant only because they are practically all normal. All skin tests—histoplasmin, tuberculin, and coccidioidin—were negative. Routine laboratory findings were within normal limits. There was no anemia and no leukocytosis. The sedimentation rate was normal. The serum protein level and albumin-globulin ratio were normal. I presume the latter was obtained because they were thinking of the possibility of sarcoidosis, which will give an elevated globulin in 60 to 70 percent of patients. Serum globulin was normal. We come down to the roentgenogram of the chest, which is really the most significant finding all the way along to the illness, at least as far as is noted in this protocol. The description of the hilar mass is not adequate. We should like to know whether it is infiltrating

out from the hilar region or whether it had sharp borders or just what it is I will ask to see the roentgenograms

D + Kohl At the time this patient complained of symptoms there was a sharply defined lesion directly related to the left hilar area (fig 1) We were fortunate in having two previous films made in February and June 1953 which had been interpreted as normal and even looking back to that time there was no indication of anything wrong in

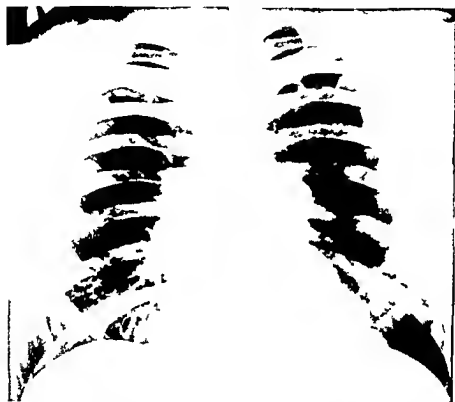


Fig 1 Postero-anterior roentgenogram of the chest 6 November 1953. The mass lesion producing a prominent left hilar region can be readily seen.

the hilar area at that early date (The onset of symptoms was in mid October 1953) The films we have taken in November and December all show essentially the same picture Films made on inspiration and expiration show the mass to be the same size which would indicate that it is solid rather than vascular A lateral film showed it to be located in the hilar area There was no other abnormality in the lung field There does not appear to be infiltration or extension outward There is no shift of the mediastinum We can see the trachea and main bronchi in some of the films and they are not encroached upon in any manner

Doctor Beard Can you say whether this is a lymph node in the left hilus or a lesion in the parenchyma of the lung?

Doctor Kohl I don't think you can say whether it is a lymph node or another mass. We do have a few other films. An angiocardioqram done on 15 December (fig. 2) and roentgenograms made with the Bucky diaphragm show the trachea and bronchial tree quite well. There is no



Figure 2. Angiocardiogram showing good filling of the superior vena cava, right auricle and ventricle, and pulmonary artery and its branches. This demonstrates that the hilar mass was not an aneurysm of the pulmonary artery and that the mass lesion was separate from and did not interfere with the vascular channels.

encroachment that can be seen. Sodium acetrizotate was injected and we see the superior vena cava, right auricle, and the right ventricle outlined. There is some dye in the pulmonary artery. The mass does not seem to be obstructing the pulmonary artery. It does not appear to be a vascular mass because there is no aneurysm sac filled. There is no compression of any branches of the pulmonary artery.

Doctors B and Thank you. The only other additional thing in the protocol that would help us is the description of the bronchoscopic examination. The carina was reported to be pulsating more than usual. However it was in the midline. Also noted was an extrinsic mass partially occluding the orifice of the left main bronchus. There was no evidence of any endobronchial lesion. No specimen for biopsy was taken. The left main bronchus was patent and normal below the area of this extrinsic mass. The urologic consultant thought the testicular abnormality was due to an enlarged and inflamed epididymis which would certainly be compatible with the description here in the protocol.

So we have a young man 39 years of age with a relatively asymptomatic lesion in the left chest associated only with pressure symptoms and with some arthralgia in the left shoulder without any significant physical findings as far as the pulmonary system is concerned and with normal laboratory findings with the exception of the roentgenograms. In the differential diagnosis then we would have to consider several things because we have no group of findings that would lead us to make a definite diagnosis. In this case it is easy to make a therapeutic diagnosis. By that I mean the decision of what to do is easy. Because we can't make a definite diagnosis excluding neoplasm in this area a thoracotomy certainly is justified and indicated. The exact diagnosis of course would be dependent on what was found at the acetom.

We can try to amuse ourselves by seeing how close we can get to the diagnosis by putting together a few of these findings. One thing we have to consider is a mass in this area would be a cardiovascular lesion. Aortic aneurysm, enlarged left atrium, and aneurysm of the pulmonary artery can all cause pressure on the left main stem bronchus. The can be excluded almost with certainty on the bronchoscopic findings because it is almost impossible for a vascular lesion, per se, to compress and partially occlude a bronchus without causing displacement. Of course the angiocardigram further helps to eliminate any vascular lesion. Teratoid tumors, thymic tumors and intrathoracic goiters usually occur in the anterior mediastinum so we can dispense with those. It is true that intrathoracic goiters can be located anywhere in the mediastinum but it is extremely rare in the hilar regions. Neurogenic tumors usually occur in the posterior mediastinum. Lipomas do occur in the hilar area or the mediastinal area but are extremely rare. They transmit pulsations well when present and can become very large without producing symptoms. Lipomas usually have a different appearance on roentgenograms from this tumor giving a light peripheral zone in the form of a halo with a dense opaque center. So lipoma can more or less be ruled out. Bronchogenic cysts usually are found beneath the carina and attach to the trachea or main bronchus where they originate. Their symptoms consist chiefly of pain and pressure phenomena. They may move vertically on swallowing and that was not noted in this patient on fluoroscopy. It would be unusual to have a

bronchogenic cyst obstruct the orifice of the left main bronchus because of extrinsic pressure. Pericardial cysts in this location also are quite rare.

One unusual phenomenon noted in lymphomatoid disease that is occasionally of diagnostic significance is that in spite of considerable enlargement of the mediastinal glands there is seldom any intra-thoracic displacement. In this case all mediastinal organs—the trachea, heart, carina, bronchi, et cetera—are in normal position. This would make us consider that this hilar mass is most likely an enlarged node or nodes. For practical purposes the diseases which must be considered in the differential diagnosis in generalized or localized mediastinal lymphadenopathy are tuberculosis, coccidioidomycosis, lymphoblastoma, metastatic neoplasms, and sarcoidosis. We also have to consider bronchogenic carcinoma with metastasis to the lymph nodes. That is a very good possibility in this case. We cannot from the information in the protocol definitely rule out any one of those and particularly not bronchogenic carcinoma or lymphoblastoma, so that as I mentioned before the therapeutic decision for thoracotomy is certainly justified at this point. If it were a malignancy I would doubt that it was a resectable one because of the close proximity of the tumor to the carina. On the other hand the information to be gained from a definite diagnosis would certainly be helpful in directing further therapy.

Now concerning tuberculosis, tuberculous lymphadenopathy or tuberculoma. Against the diagnosis is the fact that the skin tests are negative. That does not rule it out because I am sure many of you have had the experience of seeing a patient in whom a tuberculoma was found at operation yet who had a negative tuberculin skin test. But the fact that the skin tests were negative would be statistically against this as a tuberculous lesion. Against the possibility of tuberculoma would be the lack of general symptoms and the normal sedimentation rate. Of course none of these definitely rule out a focal tuberculous lesion.

Coccidioidomycosis usually is located in the peripheral part of the lung but may occur in any part and occasionally is accompanied by hilar enlargement. Sixty percent or more of the patients will be asymptomatic. Against coccidioidomycosis in this patient is the normal sedimentation rate and the negative skin test, however the negative skin test as we mentioned before does not rule it out. In a study of a series of 50 patients in whom focal pulmonary coccidioidal lesions were removed surgically, skin tests were positive in only 67 percent of all patients, in 73 percent of patients with cavitory lesions, and in 56 percent of patients with solid lesions.¹ So that leaves a fairly large percentage with negative skin tests. We cannot definitely rule out coccidioidomycosis although the hilar location is against this being the diagnosis.

Histoplasmosis will occasionally produce a focal solid pulmonary lesion and this patient did live in the southern area but the negative

skin test and lack of definite evidence of a parenchymal lesion would make this disease very unlikely

Sarcoidosis is another condition we certainly have to consider because it can cause large pulmonary masses both in the hilus and in the parenchyma of the lungs and be relatively asymptomatic. It may produce only hilar node enlargement. It is a little unusual for sarcoidosis to present only mediastinal node enlargement and only in one hilus but it can produce that picture. In one series seven out of 52 patients with sarcoidosis had only mediastinal adenopathy.³ Sarcoidosis interferes in some way with the delayed type of skin reaction so that a negative tuberculin skin test is the rule rather than the exception in this disease. Sarcoidosis cannot be ruled out.

One symptom to me is extremely interesting in relation to pulmonary disease and if we want to make a little differential diagnosis based upon that at least it might be entertaining if not correct. Arthralgia and osteoarthropathy with or without clubbing of the fingers associated with pulmonary disease are very interesting phenomena unexplained it is true but there are certain interesting differential points that may be helpful. For instance in one series of 1024 patients in whom pulmonary resection was performed a study was made of the incidence of arthralgia with and without objective manifestations of clubbing of the fingers or osteoarthropathy.⁴ In this fairly large series not one patient who had suppurative disease or tuberculosis had arthralgia not associated with clubbing of the fingers or a definite finding of osteoarthropathy. So it appeared that the finding of arthralgia alone in this fairly large series was definitely in favor of a neoplastic lesion either pleural mesothelioma or some other malignant pulmonary lesion. So we get down to the consideration of neoplasms that could be in this area.

In the lymphoma group we cannot differentiate clinically between Hodgkin's disease and lymphosarcoma. In tumors of the lymphoma group there is often interference in some way with antibody reactions so that it is not unusual to get a negative delayed type of skin test. Lymphoma may be the diagnosis in this case. It cannot be excluded on the information we have in the protocol. Secondary metastases to the hilus from any primary focus remains a possibility but in the information here I have no indication for any primary neoplastic lesion. The urologic consultant was not impressed by the testicular findings and those were the only ones which would lead us to suspect a primary lesion elsewhere. Furthermore a patient five feet nine inches tall and weighing 166 pounds certainly had no weight loss. If he had a primary malignant lesion with distant metastasis we would expect more symptoms. Bronchogenic carcinoma is a good possibility. A malignant lesion in this area could extend to the nodes about the hilus and also give obstruction to the bronchi. I would if I had to make a guess in this case guess that this is a neoplastic lesion either a primary neoplasm of the lung or one of the lymphoma group. I don't think we can definitely rule out any of the diseases mentioned in the chronic granuloma group.

Doctor Jensen. Is there any discussion from members of the audience?

Doctor Kohl. I would like to ask Dr. Beard what percentage of the Boeck's sarcoid he mentioned had only hilar adenopathy?

Doctor Beard. I didn't say any percentage. In that series seven out of 52 patients had involvement in mediastinal nodes only. I don't remember that it was broken down as to the number having involvement in unilateral mediastinal areas.

Doctor Kohl. In my experience most cases show hilar adenopathy alone and I think to have parenchymal infiltration is rather unusual. We went through a 10-year series of all patients with Boeck's sarcoid observed at a large institution and the incidence of pulmonary parenchymal infiltration was low. Most cases were limited to the hilar nodes, mostly bilateral but not all. I was surprised that the incidence of hilar adenopathy was so low in that series.

Doctor Beard. That would agree with my experience in the few patients I have seen. I think that they meant this was the only finding of sarcoidosis. Most often there are other findings of peripheral nodes, skin lesions, splenomegaly, hepatomegaly or ocular lesions. In seven of 52 patients the only finding was mediastinal lymphadenopathy. I think the incidence of mediastinal lymphadenopathy without other radiologic findings, say of a parenchymal lesion of the lung, is certainly higher than seven out of 52.

Doctor Kent*. You didn't explain in too great detail how you account for the shoulder pain. I don't know whether that is a red herring or not.

Doctor Beard. I do not know whether it is a red herring or not. We do not have any report of examinations of his left shoulder, so we do not know that the arthralgia was not due to some local disorder in the shoulder. The relationship of arthropathy to pulmonary disease is certainly an interesting one. There are many reported cases in which arthropathy was a major finding in patients with pulmonary tumors, and in whom the joint manifestations cleared completely following pulmonary resection. In several of these, recurrence of the malignancy was associated with recurrence of the arthropathy. I do not know of any adequate explanation for this association. The arthropathy is certainly not just on an anoxic basis. Some authors have attempted to relate the arthropathy in some way to pleural involvement because the highest incidence of arthropathy of the most severe degree is associated with those pulmonary lesions involving the pleura, such as a mesothelioma.

Doctor Jensen. Any other questions or comments?

Doctor Unger*. Here is a 39-year-old man who had a bilateral vasectomy in 1948 and five years or so later is described as having a slightly

enlarged left testicle and a cordlike mass in the left scrotum. This coupled with the fact that he has vague abdominal complaints and a mediastinal mass makes me think of seminoma with mediastinal metastasis

Dr. B. and The findings in the testicle together with the pulmonary lesion might also suggest tuberculosis because tuberculous epididymitis is not too uncommon a finding. I certainly agree that seminoma is a possibility.

Dr. J. n. I believe it would be pretty difficult to have a real epididymitis with the vas ligated and divided because that is a treatment for chronic epididymitis which usually cures the disease if it is of the suppurative infectious type at any rate.

Dr. Maltry He could have had a vasitis following vasectomy and this might have been a residual finding there.

Dr. Jen. m. Any other discussion or comments? If not I believe we are ready for Dr. Fair who operated on the patient.

Dr. F. Jr. I think there are several pertinent points I want to bring in that have not been discussed fully enough. I don't mean to repeat what already has been given. We get to thinking sometimes of carcinoma of the lung in terms of the classical textbook description when really there is no such thing. There are no absolutely pathognomonic clinical signs nor are there radiologic findings from which one can say this is cancer of the lung. One symptom of cancer of the lung that is rather persistent and present in 90 percent of the patients is cough, after we say that few other symptoms come into play with such consistency. When unilateral wheezing or symptoms of pneumonitis develop the lesion has advanced so far that there is obstruction of a bronchus. Hemoptysis is present in 50 percent of the patients. Weight loss, loss of strength and pain in the chest are late symptoms. Consequently in cancer of the lung it is refreshing to people who have the responsibility of carrying out definitive treatment to see the patient before all these symptoms appear. We have all seen people with primary carcinoma of the lung who are relatively asymptomatic and in whom the lesion was discovered by a routine roentgenogram of the chest. I saw this patient in consultation as did the civilian consultant in thoracic surgery and it was our opinion that the man had carcinoma of the left lung based on the fact that the mass was in the hilar region. My second choice was one of the lesions of the lymphoma group. You will notice on the protocol that we were so sure of the diagnosis that we operated on him five days before Christmas and that is a time when no one wants to be in the hospital including the doctor.

Clinical diagnosis

Carcinoma of lung with metastasis to hilar nodes

Dr. Emil Maltry, Civilian Consultant, Lcol, 57

Major Ellis F. USAF (MC), Chief of Thoracic Surgery, Seattle.

Dr Beard's diagnosis

Carcinoma or lymphoma of hilar nodes

ANATOMIC FINDINGS

Doctor Fair: At operation we found a mass in the left hilar region which seemed to involve the parenchyma and adjacent nodes. It was our opinion that the lesion was a carcinoma resectable but probably not curable. We started a block dissection high above the palpable mediastinal nodes and submitted a node to the pathologist. It might be wise for the pathologist to discuss his findings here. Then we will go ahead with the discussion of our surgical treatment.

Doctor Simon: Fortunately we encountered on frozen section a lesion rather easy to identify as granuloma and not tumor. We considered that sarcoid was the most likely diagnosis but could not at that time rule out some of the other granulomas. Subsequently permanent sections showed excessive involvement of nodes by focal accumulations of epithelioid cells and multinucleated giant cells. Caseous necrosis was absent. A very few lymphocytes were present in the focal lesions which tended to be sharply circumscribed. Although the focal lesions were of variable size they showed little tendency to coalesce. Some of the giant cells contained asteroid inclusion bodies. In some areas there was considerable fibrosis apparently the result of fibrous tissue replacement of granulomata. Acid fast and Hotchkiss McManus stains failed to reveal any organisms. Material from a saline suspension of the tissue was cultured on blood agar chocolate tellurite Sabouraud's agar and Löwenstein's medium and inoculated into a guinea pig. These procedures failed to demonstrate a causative agent.

Doctor Fair: After we got the frozen section diagnosis we had to consider the diagnosis of sarcoid but the mass felt like a carcinoma. We sent Dr. Simon a second node and he was consistent in his diagnosis. Then our problem was whether or not we should submit the man to a pneumonectomy for sarcoidosis or to close the chest. It was our decision not to remove his lung because to get rid of the lesion would interfere with the vascular channels to the lung to the extent that it would require total pneumonectomy. Therefore after submitting the nodes we closed him. Of course we were concerned as to whether the disease would progress remain stationary or regress. The man was stationed here at this base and we obtained a roentgenogram of the chest on him some two months after operation. Do you have that here Dr. Kohl?

Doctor Kohl: This film was taken in February 1954 (fig. 3). This is after operation of course and the lesion is quite a bit smaller. It is not completely gone.

Doctor Jensen: Thank you very much. Any other discussion?

Capt. Thomas R. Simon, USAF (MC), Chief of Pathology Service

D + G p In the postoperative period we thought rather seriously of treating the patient with cortisone. However, because the lesion seemed to be regressing and the patient did not want to stay in the hospital, we thought that we would have no means of evaluating its effect. Scalene node biopsy for the possibility of Boeck's sarcoid had been considered, but it was believed that this so resembled a malignant lesion that no further time should be used for diagnostic procedures.

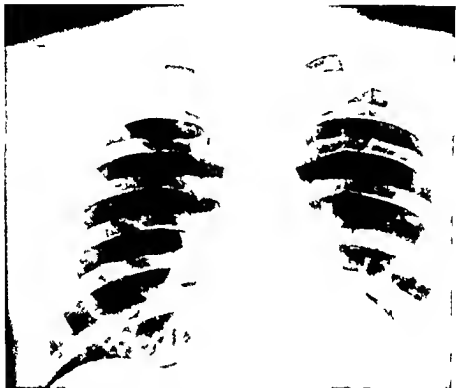


Fig. 3. Roentgenogram of chest taken 5 February 1954. The lesion producing a prominence of the left hilum is now markedly diminished.

Anatomic diagnosis

Boeck's sarcoid of hilar nodes

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Tuberous Sclerosis

Report of Two Cases and Brief Review of the Literature

ROBLEY D SMITH III *First Lieutenant, USAF (MC)*

OSCAR L SAPP *Captain, MC USA*

JOSEPH F METZGER *Captain, MC, USA*

TUBEROUS sclerosis was first described in 1880 by Bourneville as a symptom triad consisting of mental retardation, epileptiform seizures, and adenoma sebaceum, accompanied by multiple tumorous nodules of the brain. The complex was first called Bourneville's disease, but because of the "potato-like" appearance of the brain nodules and the fact that the nodules became partially or completely calcified in later years,^{1, 2} the disease is popularly called "tuberous sclerosis."

The disease primarily affects tissue of ectodermal origin,¹⁻⁴ such as that of the skin and brain. However, many cases have been reported in recent years in which tissues of mesodermal and even endodermal origin have been affected such as in lesions of the kidneys, spleen, liver, thyroid, and bone. Polyposis of the colon has been reported as part of the entity.⁵

Most authors classify tuberous sclerosis with the neurocutaneous syndromes which include the Sturge-Weber syndrome, neurofibromatosis (von Recklinghausen's disease), and von Hippel-Lindau's disease.³ All of these entities are primarily defects in tissue of ectodermal origin and many similarities of these entities are noted. Dickerson⁶ has suggested that the syndrome should be described under one entity and that no clear cut differentiations should be made.

There is a much higher percentage of reported tuberous sclerosis in Europe than in America. Ross and Dickerson⁷ reported an incidence of about 0.0002 percent in the general population, and Dickey⁸ found that 0.01 percent of admissions to institutions for epileptics and feeble-minded in America was due to tuberous sclerosis while Europe had an incidence of 0.6 percent. There has been no reported difference in sex incidence.

The first symptom is usually that of mental retardation.³ The patient is slow in learning to walk or talk,⁹ and in other basic developments. Cases in which there was no apparent mental

¹ From Walter Reed Army Hospital, Washington, D. C. Lt. Smith is now assigned to U. S. Air Force Hospital, Medical Air Force Base, Ga.

retardation and adjustment to environment was good have been reported however Epileptiform seizures may or may not become manifest but when present they usually begin between the ages of three to six years The seizures follow no set pattern and may be mixed (Jacksonian grand mal petit mal, or any combination) and may vary from one extreme to the other Five to 10 seizures may occur daily or there may be years between episodes The seizures can usually be controlled with the standard antiepileptic drugs¹ although the effective doses are generally much higher than required for the usual patient with epilepsy It should be strongly impressed on the attending physician and family of the patient that frequent and periodic blood cell counts are necessary for patients who take large amounts of antiepileptic drugs Many cases of aplastic anemia have been reported in patients taking these drugs and at least five fatal cases have been documented

Adenoma sebaceum is the most common skin lesion seen in tuberous sclerosis¹ and is usually found in butterfly distribution over the nose cheeks and on the chin The lesions are resistant to medical therapy but are sometimes improved with radiation Surgical methods are sometimes employed to remove the facial papules

Changes in the hands and feet have been noted roentgenographically by Berland and Dickerson. Berland reported a series in which 65 percent of the patients showed osseous lesions of the hands and feet The lesions are usually in the form of cyst-like changes in the phalanges irregular cortical thickening of the metacarpal and metatarsal bones and patchy areas of cortical thickening associated with cystic lesions Budenz² noted osseous lesions of the rib humerus and femur

Often a pronounced anorexia may be a major complaint but is not common enough to warrant inclusion as a diagnostic aid

On several occasions the disease has been diagnosed by the appearance of ocular lesions These lesions usually arise from the retina and are most often flat gray oval tumors^{1,3} Ocular lesions are not a consistent finding but they have been reported in as many as 25 percent of the cases

Electroencephalographic studies by Dickerson and Hellman^{4,5} indicate that abnormal patterns are formed in a significant number of patients with tuberous sclerosis The percentage was higher than in institutionalized epileptics without tuberous sclerosis However the patterns were not specific or definite enough to be of diagnostic value

CASE REPORTS

Case 1 A 24-year old woman was admitted to this hospital on 1 November 1953 complaining of fever, menorrhagia, anorexia, and extreme weakness of 24 hour duration. Her past history was essentially negative and noncontributory.

Past history The history was obtained from the patient's mother who reported that the patient was apparently normal at birth and developed normally in her early years. The mother also stated that at five years of age the patient had an illness which was rather acute in onset and with associated mental confusion and "nervousness." A private physician made the diagnosis of encephalitis. No other pertinent details were available. Following this episode the patient developed aphasia which has persisted. At seven years of age she began having convulsive grand mal seizures, apparently precipitated by emotional upsets. The family reported that the convulsions occurred more frequently through the next several years. During this period, symptoms of mental deficiency were also noted. It became obvious as the patient grew older that she was markedly retarded. She was seen by several physicians during the next several years and the general opinion was that these findings represented sequelae of the "encephalitis" incurred at five years of age.

Following the menarche, at the age of 12, the convulsive seizures became more frequent and were particularly aggravated at the time of the menses. She was also extremely nervous, cried easily, and became excited by loud or sudden noises. During the next several years she developed sudden periods of syncope which did not appear to be associated with the seizures. For this reason she was never left alone. In her late teens she sometimes limped or intermittently dragged her feet.

For five to six years prior to her admission she was given various anticonvulsant medications consisting mainly of barbiturates, but there was little or no improvement. About eight months before admission she was given three capsules daily of a combination of 0.1 gram of mesantoin (methyl-phenyl ethyl hydantoin) and 0.032 gram of phenobarbital. With this medication the seizures became less frequent and the convulsions less severe. At the time the medication was prescribed, the physician advised frequent evaluations and blood cell counts. This was not strictly adhered to because of frequent changes of station required by her father, an Air Force sergeant. At the time of admission she had not had a checkup for about five months.

Present illness The patient was in her usual state of health until 24 October 1953, at which time the mother noted large,

bluish ecchymotic areas on the patient's trunk which became more widespread and prominent. About 36 hours before admission she developed generalized petechiae and edema of her right leg. The day prior to admission she began to have marked vaginal bleeding. This occurred 10 days after a normal period. Her temperature rose to 104° F. Later that same evening she developed a moderately severe epistaxis and bleeding from the gums.

Physical examination. On admission the patient's temperature was 102.6° F, pulse 136 (regular), respiration 24, blood pressure 110/70. She appeared acutely ill and was very restless and unco-operative. There was a pronounced pallor of the skin and diffuse areas of ecchymosis were present over her trunk and extremities. She had the general facial appearance of a retarded child and not of a 24-year-old woman. She was unable to speak but seemed to understand instructions. She clung forcefully to her mother and would cry out if left alone. Examination of the head was not contributory. The pupils of the eye were round and regular but responded to light poorly. There was fresh and old blood in the nares, nasopharynx and at the gingival border. There was moderate gingival hypertrophy with extremely pale mucous membranes. There were many teeth missing and caries were numerous in those remaining. The skin showed splotchy areas of ecchymosis over the entire body and especially over pressure points. There were petechiae present on all four extremities and on the anterior chest beneath the left breast. The lungs were clear except for a few high pitched rales in both bases. Except for poor tone qualities and a tachycardia the heart was not remarkable. Examination of the abdomen showed poor muscular relaxation from lack of co-operation. The liver and spleen were palpable two fingerbreadths below the costal margins. The peripheral tendon reflexes were hypoactive. There was a positive Kernig's sign and a bilateral Babinski. The fingers were long and tapering. Otherwise the extremities appeared normal. Pelvic examination was deferred but gross vaginal bleeding was present.

Laboratory findings. Complete blood cell count on admission showed 2.5 million erythrocytes, hemoglobin 8.4 grams and 1500 leukocytes with 100 percent lymphocytes. Sedimentation rate was 72 mm at the end of the first hour. Hematocrit was 20. Urinalysis (catheterized specimen) showed 1 plus albumin and 10 to 20 white blood cells. On the second hospital day the erythrocyte count was 2.4 million and hemoglobin 8.1 grams. Urine culture was negative. Rickettsial agglutinations were negative. Six days following admission the leukocyte count was 950 with 100 percent lymphocytes. The erythrocyte count gradually fell to 1.4 million and the hemoglobin to 5.6 grams on the day of death.

Course in hospital On the day of admission a sternal marrow aspiration was performed, and the diagnosis of aplastic anemia (pancytopenia) was made. The patient was given 300 mg of cortisone daily in divided doses and daily transfusions of fresh whole blood. She was seen in consultation by the gynecology service and given 25 mg of methyltestosterone in sesame oil every eight hours to suppress the profuse uterine bleeding. She was also given 30 μ g of vitamin B₁₂ and 5 mg of folic acid three times daily. No detectable change was noted during the following few days. In spite of massive doses of broad spectrum antibiotics she continued to run a daily temperature of spiking character, ranging from 102 to 104 F. Bleeding from the nose, mouth, and vagina continued, and two days prior to her death she had bright rectal bleeding. On 9 November she became much weaker and continued to demonstrate the severe hemorrhagic diathesis. Her tachycardia increased and her blood pressure became difficult to maintain above 70 mm Hg systolic. Her general condition became progressively critical and on 10 November at 0520 hours she lapsed into coma, developed acute vascular collapse, and died.

Autopsy findings The findings at autopsy consisted of aplasia of the bone marrow with generalized abscess formation in the heart, lungs, liver, kidneys, and brain.

In addition, the following findings of tuberous sclerosis were present. The brain weighed 1,235 grams. Scattered over the surface were gyri which were irregular, mushroom shaped, pearly white deformities with umbilicated centers (fig 1). In other areas the gyri were of normal configuration but were pearly white blended with the underlying white matter and there was a lack of the usual stripe of cortical gray matter in these areas (fig 2). In the white matter there were several large areas of calcification. In the horns of the lateral ventricles were numerous bend-like projections into the lumen (fig 3). Some of these projections contained areas of calcification.

Microscopically these deformed cortical areas showed a complete and widely scattered disorganization of the usual cellular layers of the gray matter. There were numerous large and bizarre multipolar, abnormal glial cells. In the outer zone of the cortex there were coarse bands of fibers running tangentially. Sections of the ventricular nodules revealed that these were made up of coursing bands of spindle-shaped cells with large areas of calcification.

Other associated lesions consisted of a lipoma of the heart, a hamartoma of the liver, a hamartoma of the myometrium, an adenoma of the thyroid gland, and a choristoma of the kidney. This choristoma of the kidney consisted of an extension of the

cellular perirenal fat through the capsula of the kidney. There also were islands of adult fat lying out of continuity in the kidney cortex.



Figur 1 (case 1) A large, dark, lobulated gyrus can be seen on the left occipital lobe of the brain.

Case 2 A 13-month-old daughter of an officer was first seen at this hospital because of an abdominal mass. Physical examination revealed bilateral upper abdominal masses. Surgical exploration was performed and the patient was found to have bilateral polycystic kidneys. The cysts were drained and the defects repaired. The patient had several severe and unexplained convulsive seizures following surgery and frequent upper respiratory infections. At 25 months of age the patient developed many tiny lesions on the cheeks, nose, and chin which seemed to contain dilated superficial capillaries.

At two and one-half years while the patient was in the hospital for a checkup the right kidney was found to be definitely palpable and irregular in size and shape. An excretory urogram revealed functioning kidneys with marked dilatation of the right renal pelvis and dilatation and blunting of the calyces. The facial lesions were noted again at this time and appeared to be more pronounced. Normal height 36 1/2 inches weight 32 1/4 pounds.



Figure 2 (case 1) Cross section of a portion of the occipital pole of the brain showing a gyrus with a large area of umbilication. The gray matter of this gyrus is pearly white and poorly defined from the underlying white matter

and developmental progress were noted at this time. The patient was walking and talking well.

The facial lesions were identified as adenoma sebaceum (fig 4). A diagnosis of tuberous sclerosis was made on the basis of the kidney lesions, unexplained convulsive seizures, and adenoma sebaceum.



Figur 3 (cas 1) Coonal ction of the bra. B lg g nt th right l t al v tricl at t nfe or and lateral port on a two tumo nodule. Th ferior od l ba a ex cumsce bed app a anc. Al o houn n th s ction a cy t paces du to the postmortem acc m l t ion of ga f om bacteri l growth.

Laboratory examinations including an electroencephalogram revealed no abnormalities except for those found previously during the excretory urogram. No intercranial calcification was detected on the roentgenograms of the skull.

At four years of age the adenoma sebaceum had become more pronounced. It covered the nose and cheeks in a butterfly distri-

butian, and was more prominent on the chin. Roentgen ray treatments were given, but there was no improvement. Excretory urograms performed at this time revealed a nonfunctioning left kidney and a moderately severe hydronephrosis of the right kidney.



Figure 4 (case 2) Adenoma sebaceum as noted at three years of age

At four and one-half years of age, the patient again had several unexplained convulsions which lasted about a minute. There were no aftereffects and no history of headaches. A repeat electroencephalogram, made while the patient was awake, revealed no abnormalities.

At the present time the facial lesions are much more prominent and pronounced than ever before. They are more numerous and appear to be spreading. There is a large, firm mass deep in the right abdomen. The blood pressure has been consistently normal and the blood urea nitrogen has never been over 20. Physical examination is otherwise essentially normal.

There has been no history of mental retardation and the patient has made a very good adjustment to her environment.

We believe that the kidney lesion represents a renal hamartoma frequently seen with tuberous sclerosis. Although the patient is progressing well at present the kidney lesions, convulsions and adenoma sebaceum justify the clinical diagnosis of tuberous sclerosis.

COMMENT

Tuberous sclerosis is a symptom triad consisting of mental retardation, epileptiform seizures and adenoma sebaceum. The disease primarily affects ectodermal tissues but lesions of tissues of mesodermal origin have also been reported. It is a relatively uncommon disease but the prominence of symptoms facilitate a comparatively easy diagnosis.

The seizures can usually be controlled with standard anti-epileptic drugs but the hemogram should be observed carefully while the patient is receiving medication of this type. Osseous lesions may be seen on roentgenographic examination in over 50 percent of the cases. Ocular lesions and abnormal findings shown in electroencephalograms may be of help in the diagnosis of the disease.

Of two case reports of tuberous sclerosis presented, one patient died of pancytopenia following drug therapy. In our opinion the existence of aplastic anemia is probably related with prolonged uncontrolled mesantoin therapy. We cannot state with absolute certainty that this drug was unquestionably the causative agent of the aplastic anemia in our patient but we believe that it probably was. The other patient was followed from her first admission up to the present time.

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Subluxation of the Head of the Radius in Children

DAVID F EUBANK *Captain, MC USAR*

THE "pull syndrome"¹ or "nursomaids dislocation"² occurs frequently and should be easily recognized and treated. The lack of discussion of this condition in several major podiatric textbooks, however, as observed by Kanter and Bruton,⁴ is evidence that it has not been sufficiently emphasized.

Since August 1953, subluxation of the head of the radius has been diagnosed in three children admitted to the pediatric outpatient department of this hospital. In a fourth child, seen earlier in the night emergency room, the diagnosis was not made, although the history and clinical findings warrant inclusion in this group. During this period ending 1 February 1954 there have been 3,891 pediatric outpatient clinic visits.

CASE REPORTS

Case 1 On 17 November 1953 the father of a four and one half year old girl pulled her arm in an attempt to pick her up against her will. Immediately after this maneuver the child complained of pain in the region of the elbow and due to discomfort refused to allow the father to examine it. Two hours later I saw her in the pediatric clinic. The only positive physical finding was painful supination. On reduction of the dislocation, there was an audible and palpable click. The child was immediately able to use her arm freely. A roentgenogram demonstrated no abnormality.

Case 2 A two and one half year old boy presented the following history on 16 December 1953. During play with an older sibling, the boy's arm was pulled with considerable force. Immediately afterward the child refused to use the injured arm, later he was restless and awoke several times during the night. The next day when I examined him, the only physical finding was painful supination. A palpable click was felt on reduction of the dislocation. The arm was then used freely and without discomfort. The roentgenographic findings were within normal limits.

The past history revealed a previous episode of a like injury to the same arm. At the age of 21 months when he was being helped from the family automobile his arm was pulled. He became irritable and showed obvious discomfort in region of the elbow. A physician diagnosed his condition as a possible vitamin deficiency. Roentgenograms were not made. The child continued to be fretful and evidenced pain in the elbow for four days. Suddenly he began using the arm and showed no discomfort. A spontaneous reduction is the most probable explanation.

Case 3. On 18 January 1954 a three year old girl's arm was pulled while tumbling at play. A pop was heard at the time of injury. She experienced pain in the elbow region, refused to use the arm, and was restless and fretful during the night. The following morning when I examined her the only positive physical finding was painful supination. On reduction of the dislocation a palpable click was felt and supination free from pain was immediately possible. A roentgenogram showed normal findings.

Case 4. During play on a swing on 23 March 1953 a four and one half year old boy's arm was pulled forcefully by an older child. Immediately and for the two days following the boy complained of pain in the elbow region and refused to use the injured arm. Medical attention was then sought and the boy was examined in the night emergency room. The only physical finding reported was painful supination and a roentgenogram demonstrated no abnormality. Although a diagnosis of subluxation of the head of the radius was not made the boy freely used the injured arm without pain shortly after the physician had manipulated it in examination thus indicating reduction of the dislocation. In my opinion the history and clinical findings in this case warrant its inclusion in this series as another case of subluxation of the head of the radius.

COMMENT

Subluxation of the head of the radius in children is an anterior dislocation of the proximal cartilaginous head of the radius through the annular ligament. It is most commonly observed in children between the ages of two and five years and particularly in those children who are learning to walk. The history usually reveals a sudden jerk or pull at a time when the child's arm is in a position of extension, elevation and pronation. Following the injury the child experiences an onset of pain in the region of the elbow which causes him to hold his arm in a position of extension, adduction, pronation and slight flexion at the elbow. Any manipulation or use of the arm is avoided. The parents may seek advice late in the evening because the child is uncomfortable when attempting to sleep.

Double Urethra

URQUHART L. MEETER L. Lieutenant Colonel, USAF (MC)

DDOUBLE urethra in the male is considered a rare congenital abnormality by Slotkin and Mercer who cited De Berner-Lagarde that only 38 cases had been reported until 1932. Only scattered reports have appeared since that time. These authors also stated Chauvin has divided these cases into five types: (1) complete reduplication from glans to bladder (rarest type); (2) incomplete reduplication accessory urethra ends blindly proximally and lies ventral to true urethra; (3) incomplete reduplication accessory urethra ends blindly proximally



Figure 1. Photograph showing glans penis cleft with a dilator the normal urethra and a finger to the accessory orifice.

and lies dorsal to true urethra; (4) Y urethra with accessory urethra ending in true urethra distal to external or internal sphincter; (5) Y urethra with accessory urethra opening at penoscrotal junction and joining normal urethra somewhere proximal to this. The accessory urethra may also end proximally in the seminal vesicles as noted by Fergusson.²

Slotkin and Mercer believed that the most generally accepted theory of the cause of double urethra "is that the anomaly is due to a continuation of the splitting process of the urorectal septum with a consequent bifurcation of the urothral anlage into a dorsal and ventral portion, partial or complete." The symptoms vary from none to incontinence, if the opening is above the sphincters, there may be dorsal angulation of the penis or a double stream of urine. If urethritis is contracted, a chronic recurrent urethral



Figure 2 Roentgenograms of bladder accessory urethra and normal urethra showing the blind ending of the accessory urethra near the internal sphincter and the lack of communication between the two urethras

discharge that is difficult to treat may result. Surgical treatment is indicated for incontinence or excessive dorsal angulation of the penis. Fulguration of the accessory tract may be necessary to clear a chronic discharge.

CASE REPORT

A 22 year old man was admitted to this hospital on 22 January 1954 complaining of two openings in his penis. He had contracted

gonorrhea in December 1953. Treatment with penicillin cleared the discharge from the normally situated opening at that time but the discharge persisted from the dorsal orifice. During the first admission the discharge responded to oxytetracycline (terramycin) irrigations. The patient was returned to duty but the discharge recurred shortly thereafter. He was readmitted on 2 March 1954.

Physical examination findings were normal except for the penis. The glans penis had a dorsal epispadic cleft with a normally situated external meatus and an accessory orifice at the proximal extent of the cleft as well (fig 1). The dorsal orifice was probed to a depth of 17 cm with a ureteral catheter. There was slight dorsal angulation of the penis. Roentgenographic examination of both urethras indicated they were not communicating. The ventral urethra appeared normal, but the dorsal urethra was small and ended just under the vesical mucosa near the internal sphincter (fig 2).

The patient's dorsal urethra was irrigated with oxytetracycline (25 mg per cc, 5 to 10 cc per irrigation) four times a day and the discharge gradually disappeared. On 16 March 1954 under general anesthesia a ball point cystoscopic electrode was passed up the accessory urethra to a distance of 17 cm and the urethra fulgurated as the instrument was slowly withdrawn.

The patient was given streptomycin postoperatively for five days and penicillin for 15 days in an effort to prevent an increase in the dorsal angulation of the penis due to postoperative fibrosis. He was also given cortisone as follows: 300 mg on 16 March, 200 mg on 17 March, 100 mg daily from 18 March to 7 April, 50 mg from 8 to 13 April and 25 mg from 14 to 21 April. A fibrous cord was noted along the course of the fulgurated urethra but this has gradually disappeared. Five months after fulguration there was no fibrous cord and no increase in the slight dorsal angulation of his penis. The accessory orifice has closed.

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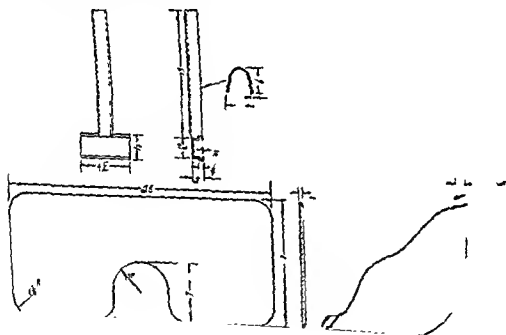
CLINICAL NOTES

A Simplified Arteriographic Shield

FREDERICK R. LATIMER *Lieutenant (MC) USN*

FRANCIS PERRELLY *Hospital Corpsman, 1st class USN*

THE ADVISABILITY of adequate protective devices for those engaged in performing roentgenologic diagnostic procedures needs no comment. The mutilated hands of physicians and dentists of earlier generations offer mute testimony of the dangers involved.



by our maintenance department and therefore our problem reduced itself to the elimination of the radiation spray below the cone and of the secondary radiation from the patient



Fig 2. To be placed in position to protect patient from radiation.

With a tin snips a piece of one-eighth-inch thick lead was fashioned in the dimensions shown in figure 1 For stability

the edges were rolled around a one-quarter inch diameter bending rod which had been previously bent to the desired shape. Two pieces of channel iron were welded to some obsolete attachment slides and these then served as upright posts with the concavity directed inward. The finishing touches were added by cutting a piece of rubber laboratory tubing lengthwise and slipping it in place over the free edge of the lead in the aper at the bottom of the shield.

Our arteriograms are done in the usual manner by inserting needle percutaneously into the carotid artery. Using the channel iron concavities as guides, the lead shield is carefully slipped into place by lowering it down over the patient's neck prior to the injections (fig. 2). The rubber tubing over the free edges of the metal serves to protect the patient's neck from abrasion. With the barrier in place the exposures are made in the usual manner in the anteroposterior and lateral positions. The device reduces to an immeasurable minimum the amount of radiation in the zone of the operator's hands as recorded by the Victoreen meter.

OMNIBIOTICS

The physician in practice and many of his patients as well are constantly on the lookout for some simple substance or formula which can be applied with universal success. The busy practitioner is particularly desirous of having some major weapon on which he can always rely to be successful in all types of infections and which would thus relieve him of the responsibility and trouble involved in the complicated or even simple diagnostic procedures. Whenever such a cure-all has been offered it has usually been grasped with enthusiasm and widely and indiscriminately applied. The disappointment which invariably has followed has always been proportional to the magnitude of the unwarranted promises and claims that had been held out. On the other hand the discriminate choice of therapeutic agents only on the basis of proper indication and proved efficacy for a desired purpose though perhaps more difficult to practice may in the long run be less disappointing and more rewarding.

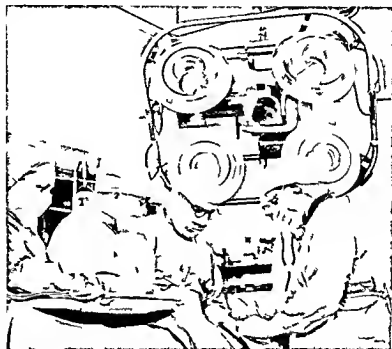
—MAXWELL FINLAND M. D.

in British Medical Journal

p 1121 Nov 21 1953

ARMY'S COLOR TV BRINGS OPERATIVE TECHNIQS TO CLASSROOMS

A color television station WRAMC TV has been installed at Walter Reed Army Medical Center for educational use at the hospital and the graduate school. More versatile than conventional audio-visual techniques, color television permits instantaneous viewing of events by unlimited audiences at remote and different locations, and medical, surgical and laboratory techniques can be presented clearly, graphically and dynamically.



Color television of an abdominal operation at Walter Reed Army Medical Center. Left to right: Captain Ethel H. Gibson, operating room nurse; Major William C. R. USAF, chief of identification; General Surgery Colonel Robert G. Ts, chief of the Surgical Department; Colonel Harvey C. Slumacher, chief of the hospital's Anesthesia and Operating Services, and Major General Leonard D. Hutton, Commanding General.

A 41½-pound camera is suspended in a specially designed lighting fixture. Lights and camera are synchronized so that when the surgeon has the best lighting on the field of operation, the camera operated by remote control will pick up the scene without obstruction. The surgeon wears a chest microphone and hearing-aid type earphone, keeping in constant communication with students in a viewing room. He lectures and answers questions as he proceeds with the operation.

PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army, Navy, and Air Force have recently received permanent promotions to the rank indicated

Medical Corps

Elwyn N Akers *Lt Col USA*
 Vincent J Bagli *Capt USAF*
 Henry M Cook Jr *May USA*
 Longstre C. H Milton, *May USA*
 Thom H Hewlett, *May USA*
 Archie A. H Hm n, *Lt Col USAF*
 Robert J McCann *Capt USAF*
 Charlie L. McKenna *Capt USAF*
 Byron G McKibben *Col USA*
 Joseph T Melton *Capt USAF*
 Alvin S. Natanson, *Capt USAF*

Frank A Neuman *May USA*
 John C Patterson *May USA*
 Martin A. Pfotenhaner *May USA*
 Thaur C. Rich *Col USA*
 Frederick J Sheffield *Capt USA*
 Alfred G Sigs *May USA*
 Robert J Solomon *Capt USAF*
 Henry Thompson *May USA*
 Otis L. Vad n *Capt USAF*
 Richard J Ward, *Capt USAF*
 Homer E Woosley Jr *Capt USAF*

Dental Corps

George F Coons *Capt USAF*
 James M Epperly *Brig Gen USA*
 Albert M Hollebach *Col USA*
 Robert D Jeronimus *Capt USA*
 Frederick A. Kallson Jr *Capt USA*

Frederick W Log *Capt USAF*
 Charles J Mahan *Capt USAF*
 Kenneth L Stewart *Capt USAF*
 James A Turner *Capt USAF*
 Donald M V Bino *Capt USAF*

Veterinary Corps

Charles M Brine *Capt USAF*
 Richard E Benson *Capt USAF*
 William E. Jennings *Col USA*
 Leslie E. Melk troth *Capt USA*
 Floyd E. Monroe *Lt Col USA*

Richard B Morgan *Capt USA*
 Robert L. Nelson *May USAF*
 Donald W Ringly *Capt USAF*
 William E Roth *Capt USA*
 George H Zach le Jr *Lt Col USA*

Medical Service Corps

George P Becknell Jr *1st Lt USA*
 Herbert E Bill *1st Lt USAF*
 Robert H Cortne *1st Lt USAF*
 Frank H Dow ll *1st Lt USAF*
 Gordon Field *1st Lt USA*
 Sheldon L Feud *1st Lt USAF*
 Ellis F Hall Jr *1st Lt USA*
 Robert L Little *1st Lt USAF*
 Donald V Lord *May USAF*

Walter V McIntyre *1st Lt USAF*
 Harold O Nwso *1st Lt USA*
 Joseph P R s *May USAF*
 George M Sh *1st Lt USA*
 Lloyd E Sp *1st Lt USA*
 Joseph N Tugel Jr *1st Lt USA*
 Robert M V H n, *May USAF*
 Allan T Wes *1st Lt USA*
 William L William *1st Lt USAF*

Nurse Corps

Nathaniel May *USA*
 Marilyn B dly *1st Lt USA*
 Marilyn Co ch *1st Lt USA*
 Maurice Eck lbe s *Capt USA*
 Elea M Gar *May USA*

Elizabeth Hos *May USA*
 Mary F Hyma *May USA*
 Rhoda U J h *May USAF*
 Elizabeth M K n n dy *1st Lt USAF*
 Margarete McK n i *May USAF*

The following officers have been promoted to the temporary rank indicated.

Medical Corps

Ralph K. Brook *Comdr USN*
 August A. Bun *Capt USAF*
 Robert R. Burwell *Capt USAF*
 Edward T. Byrns *Capt USN*
 Clifton L. Courtright, *Capt. USAF*
 John H. Cox, *Capt. USN*
 Frank W. Go *Col USA*
 Milton L. H. *Capt. USAF*
 Jacob G. H. B. N. *Capt USN*
 David K. Z., *Capt USAF*
 Leroy L. K. Y. *Capt USN*
 Donald M. L. P. *Capt USAF*
 Alva E. Mull *Col USA*

William I. N. Kirk *Comdr USN*
 Byron A. N. H. I. *Col USA*
 Robert H. N. H. I. J. *Capt USAF*
 Richard B. Phillips *Capt USAF*
 Carl E. P. West *Comdr USN*
 Cal B. R. *Capt. USAF*
 Raul E. Rodriguez *Capt. USAF*
 Paul J. R. *Capt USAF*
 William T. S. Go *Capt USAF*
 John B. B. Shapiro *Capt USAF*
 Lewis S. Sim J. *Capt USN*
 Milton Spelman *Capt USAF*
 Salvatore Squitiero *Capt USAF*

Dental Corps

Leo L. Bolton, *Capt USAF*
 Quentin C. K. *Capt USAF*
 George E. Conrad *Capt USAF*
 Thomas D. G. I. *Comdr US*
 Thomas A. Gun *Capt. USAF*
 Solomon Guzman *Capt. USAF*
 Harold J. L. Cour *Capt USAF*

Joseph L. L. *Capt USAF*
 Gerald A. M. Crick *Col USA*
 Harry B. McLean *Capt. US*
 Richard V. P. *Comdr USN*
 Donald C. Shla J. *Capt USAF*
 Robert C. Shla J. *1st Lt Col USA*
 William R. Stann Y. *Capt USN*

Medical Service Corps

Dolor L. A. Chalmers *1st Lt USAF*
 Benjamin R. De Y. *1st Lt USAF*
 George A. F. D. J. *1st Lt USAF*
 Irving F. *Comdr USN*
 Edward F. Haa *Comdr USN*
 Benjamin E. Harman, *1st Lt USAF*
 George W. H. I. I. W. *1st Lt Col USA*
 Lester L. I. *Comdr USN*

Coram J. J. *1st Lt USAF*
 Marjorie E. K. W. J. *Comdr USN*
 Albert K. M. N. *1st Lt USAF*
 Clifford R. L. W. S. *Comdr USN*
 Matthew J. Mull *Comdr USN*
 Charles V. Quigley *Comdr USN*
 Fred C. Roepke *Comdr USN*
 Robert E. V. G. L. *1st Lt Col USA*

Nurse Corps

Archibald J. B. *1st Lt Comdr USN*
 Jacqueline Y. Bak *1st Lt USAF*
 Elsie J. B. R. I. *1st Lt USAF*
 Elsie S. Barto *1st Lt USAF*
 Edna M. Daugherty *1st Lt Comdr USN*
 Dorothy E. D. W. Y. *1st Lt USAF*
 Al H. Domingue *1st Lt Comdr USN*
 Elsie B. H. D. W. *1st Lt Comdr USN*
 Ivar H. Goebert, *1st Lt USAF*
 Thelem B. H. *1st Lt Comdr USN*
 Fan L. H. G. *1st Lt USAF*
 Paul M. Hubbard, *1st Lt USAF*

Doris R. Kline *1st Lt USAF*
 Nethal A. Knox, *1st Lt Comdr USN*
 Dorothy L. M. R. *1st Lt USAF*
 Bernice G. M. H. I. *1st Lt USAF*
 Mary A. P. G. Z. *1st Lt Comdr USN*
 Edna M. Schep *1st Lt Comdr USN*
 Ethel L. Schmidt, *1st Lt Comdr USN*
 Sue E. Smith *1st Lt Comdr USN*
 Edna M. Swil *1st Lt Comdr USN*
 Ruth H. Stry *1st Lt Comdr USN*
 Rachael E. Thom *1st Lt Comdr USN*
 Clara M. V. H. S. *1st Lt Comdr USN*

OFFICIAL DECORATIONS

BRONZE STAR MEDAL

Georg W B n Capt MSC, USA	Thomas P gh Lt Col MSC USA
Gordon A Bohn Lt Col MSC USA	James B R lly May MSC, USA
Lily J Ch n 1st Lt ANC USA	Jo R R gual 1st Lt MC USA
Georg L Donaghu 1st Lt MC USA	Willi m Sayer May MC USA
Will m H Godf y Capt MSC USA	James L Stamb gh Jr Capt MC, USA
George W Holcomb Jr Capt MC USA	Howard W Steninger May MSC USA
Claude L Hook r May MSC, USA	Robert E. St en, 1st Lt DC USA
Phil p C Ku g r 2d Lt MSC USA	Bogusl w F W dolkow ki 1st Lt MC USA
Que tin H Miller Capt MSC USA	Chester A Williams May MSC, USA
Max E Pfu tz May MC, USA	Ell otte J Williams May MSC USA

COMMENDATION RIBBON

Job W Alexa de 1st Lt MSC, USA	Matth w A. K zi u kas 1st Lt MSC USA
Willi m W B rn s 1st Lt MSC USA	Racha d A. Kiel, 1st Lt MSC USA
Cath T B tz 1st Lt ANC, USA	Don F Kimm ling Capt MC USA
Francis L B ochu, Capt MC, USA	Alf d D kee y 1st Lt MSC USA
Will m D B oks 1st Lt MSC USA	J bn D L w Capt MC USA
H k V Bullard Jr 1st Lt MC, USA	Clyd J L ds y 1st Lt MSC, USA
H ry P Capozzi, 1st Lt MSC, USA	R ymo d J L w 1st Lt MSC USA
Paul A Chapman Capt MC, USA	Harry D Lyk Capt MC, USA
Rob t N Chr n 1st Lt MSC USA	John R. M nley Capt MC, USA
Rita A Cl vel d Capt ANC USA	W yl M tschuk 1st Lt MC, USA
John Co in s 1st Lt MC USA	John M McK z e Jr 1st Lt MC USA
Con tantin Cope 1st Lt MC, USA	Kenn th C. M k ls n 1st Lt MSC, USA
G g R. Cote 1st Lt MSC USA	Fr nci M Mo gan Lt. Comdr (MC) USN
Al xa de W D Ambrosio May DC, USA	Ge ald G Mullik Capt MC USA
Matth w F D mond 1st Lt MSC USA	K i H Ozaki 1st Lt MC USA
John L Di i io May DC USA	J ss J Pittman, 2d Lt MSC USA
Lydia M Domett Capt ANC, USA	Oliv L Rich rds J 1st Lt MC USA
Lest M Dyk II 1st Lt MSC USA	Mar A. Rogal Capt MSC USA
Phill p P F i d 2d Lt MSC, USA	Ang l M Rome o-Graz an 1st Lt MC, USA
Rob t D Gamble May MC USA	Leo C. R dy Capt DC, USA
M vi G ldstein 1st Lt MC USA	Arn ld B Sch ff t 1st Lt DC, USA
G o g G Graham Lt (MC) USNR	Sh ldo C Si gel Capt USAF (MC)
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Alf C. Groth Capt MSC, USA	B uno J Steano h 1st Lt DC, USA
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R g r C. Heil 2d Lt MSC USA	Arthur P St Onge May MSC, USA
F d W Her hey Capt MSC, USA	J m s k. Tomk n Capt MC, USA
Emm B H sk Capt ANC USA	George H Tsun kaw May MC, USA
R be t W H pki s Lt (MC) USNR	Robert D Waller Capt MC, USA
Rob r M Hubbard 2d Lt MSC USA	Will am L W tren 1st Lt MSC, USA
H A. H ntm J 1st Lt MSC, USA	Darr ll E. W tov Lt (MC) USNR
M L l man 1st Lt DC, USA	J bn T Zabnske 1st Lt MSC, USA

O k L f Clusr r

The nam of ff r of the medical ervice who have been ward d dec ratio s by th United State Army Na y or As F rce ar publish d in th d partment each mo th following rece pt f f mation from offic l sources —Editor

REGULAR DENTAL CORPS OFFICERS CERTIFIED BY SPECIALTY BOARDS

The American Board of Prosthodontics

The American Board of Prosthodontics established in 1946 with the approval of the American Dental Association on 31 August 1954 had certified 163 dentists in this specialty of whom 37 were regular Dental Corps officers of the military services

L. sl R. Allen Lt. Col USAF
Will m P Bar J Lt Col USA
R y L Bodin J Col USA

J dg C. Chapman Lt. Comdr USN
H ry A C Il tt Comdr USN

W l W D Comdr USN
Lyn C D k ea Col USA
D d P D bso Comdr USN

L u Em ry Lt. Col USA
P O E Lt. Col USA

J m F bld Lt Col USA
Gen g B Foo Lt Col USA
William M F w Capt USN
A h L F ch Capt USN

Al H Gua w ld Capt. USN

Cha l D H mph ll Comdr USN

Fra k E J fl y Capt USN
Fra k C. J b Lt Col USA

S ph T K sp Capt. USN

Ell wo th K K lly Col USA
Fra k M. Ky Capt USN

Ch l W M ll Comdr USN
G d L M ll Comdr USN
P ul A. M ll Lt Col USA
Ma L. M ll Col USA

J m B N l Lt Col USA
J h V N ea Comdr USN

Benj m W O st l g Capt. USN
Edm d S Ol J Lt Col USA

M k L P k Comdr USN

J ck H S ul Capt USN
Jad C. S so Lt Col USA
Edw H Sm th J Lt Col USA

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A MESSAGE FROM THE A M A

In his state of the Union message to the eighty fourth Congress on 6 January 1955, President Eisenhower covered a number of specific items which dealt with our national defense requirements and military planning. It is believed that a review of some of these and of those in his military manpower program message of 13 January will be of particular interest to those physicians now on active military duty or who anticipate being called into service in the near future.

In his state of the Union message the President pointed out certain fundamentals underlying the administration's foreign affairs and military program. (1) He reiterated that our national goals are a realistic limitation of armaments and an enduring, just peace that there is no alternative but to maintain a powerful military force which although designed for deterrent and defensive purposes alone is able instantly to strike back with destructive power in response to an attack. (2) He cautioned that we must keep in our armed forces balance and flexibility adequate for our purposes and objectives. We should not place undue reliance on one weapon or prepare for only one kind of warfare because such a course would only invite an enemy to resort to another type of action. (3) He advocated keeping our armed forces abreast of the advances of science in order that they may effectively utilize the new weapons and techniques created through our research and development programs.

It is significant to note that the message clearly pointed out that the emphases of defense planning were made at the President's personal direction after long and thoughtful study.

To attain these fundamental goals, he indicated that the budget for military requirements would stress modern airpower in the Air Force, Navy, and Marine Corps with increased emphasis on new weapons capable of rapid and destructive striking power. In brief, it would appear that our national defense will be geared to newer types of planes and airpower coupled with weapons in the atomic and hydrogen class. This could also include the field of long range guided missiles. He further indicated the planning contemplates the strategic concentration of our strength through redeployment of our forces. In addition, it provides for reduction of forces in certain categories and their expansion in others to fit them to the military realities of our time.

From the Council, National Office of the American Medical Association. The new development does not necessarily reflect the policy of the Department of Defense. —
Ed to

The President urged the enactment of legislation to extend for four years the Selective Service Act which expires 30 June 1955 in order to continue to induct men for two years of military service. He stated that for the foreseeable future our standing forces must remain much larger than voluntary methods can sustain. He also suggested legislation designed to encourage military personnel to remain in active service through measures which would provide more adequate medical care for dependents, survivors, benefits, more and better housing, and increases in military pay and other allowances.

In his military manpower program message, President Eisenhower made the following recommendations for the armed forces:

1 Continue for four more years the draft law under which men 18½ through 25 can be called for 24 months active military duty.

2 Extend the special "Doctor Draft Law" for two years. The President stated: "In the case of doctors and dentists, I recommend that the extension be for another period of two years only. By that time it is expected that the medical personnel requirements of the armed forces can be met adequately by other means."

3 Creation of a new reserve program to be divided into two groups: one organized and ready for immediate mobilization, the other consisting of men with prior active service, nonorganized and subject to selective recall. Service in the reserves would be compulsory.

4 Create a new training program for persons 17 and 18 who would serve for six months at a pay of \$30 per month and then go into the active reserves for nine and one-half years.

5 Send men volunteering for the National Guard through an initial period of basic training in the active forces.

6 A selective pay boost averaging 5-7 percent. Career men and specialists would get most. No raises would be given during the first two years of enlisted service or the first three years as an officer.

7 A new dislocation allowance for servicemen with families transferred to a new permanent duty station.

8 An increase in the travel allowance from \$9 to \$12 per day.

9 More housing for service families and lower rentals where substantial housing is furnished.

10 Better medical care for servicemen's families and an equalization of benefits for survivors of military personnel.

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Reviews of Recent Books

WARTIME PSYCHIATRY edited by *Nolan D. C. Lewis, M.D.* and *Bernice Engle, M.A.* 952 pages Oxford University Press, Inc. New York, N.Y. 1954. Price \$15.

A compilation of abstracts of 1166 articles and 28 books, this volume covers many aspects of the international literature on psychiatry between 1940 and 1948. It represents a sincere effort to provide a timely and valuable reference book for military and civilian psychiatrists. For the purpose of aiding the organization and effective use of knowledge in the prevention, diagnosis, and treatment of psychiatric disabilities, the authors have divided this compendium into 14 sections covering such subjects as aviation psychiatry, psychosomatic problem, psychosis, psychoneurosis, special therapies, problems of combat, and the psychiatric team concept. Over 200 articles deal with the problems of selection, induction, and training, and those of demobilization and rehabilitation. Many articles describe the legal, criminal, sexual, and psychopathic aspects of wartime psychiatry.

The well-written abstracts give the scientific reader essential information for a comprehensive understanding of many different psychiatric problems. Each section is prefaced by a brief statement giving some of the important scientific principles derived from the ensuing articles.

Certain defects are present but do not detract from the intrinsic value of the book. The absence of a subject index makes it difficult to identify all of the articles dealing with one subject. Although a real effort has been made to organize the material, only a general categorizing of major subject matter has resulted. At times extraneous literature crops up where least expected. At other times abstracts dealing with the same subjects are widely separated from each other. Articles by the same author often present similar information so that one or more could have been deleted or indexed as further reference material.

The experienced observer readily recognizes from the multitude of published articles that war conditions involve a transient period of marked confusion, indecision, and vacillation over the proper techniques for handling psychiatric problems involving large numbers of persons. He further recognizes that many of the principles of wartime psychiatry previously established as valuable and effective repeatedly undergo a process of rediscovery. The facts emphasize the need for the preparation of a general treatise on the principles of wartime psychiatry. Therefore, interested investigators should use this book to review and analyze the wartime psychiatric problems presented and

to establish general principles once and for all This compendium is highly recommended as a necessary reference book which should be available not only in all military and civilian medical libraries but also at command levels for study and evaluation by those persons who play definite roles in establishing the effective use of a nation's manpower —LUCIO E GATTO C I USAF(MC)

HYPERTENSION AND NEPHRITIS by Arthur M. F. bb g M. D 5th ed on
larg d and th ghly vi d. 986 p ge 49 il t u ns L &
F big Ph lad lph P 1954 P \$12 50

The fifth edition of this well known and respected book is the first revision since 1939 Hypertension and oephritis are surveyed in their broadest aspects and discussed fully from the standpoint of vascular function and diagnosis and treatment are emphasized Seven new chapters and a total of 207 pages have been added The list of references following each chapter is complete and well arranged The style is clear direct and in logical sequence with each subheading complete including reference where applicable There are few illustrations and charts which is regrettable

Many references are made to items that are of histotic interest only The author presents the development of the accepted concept of these conditions with as full an explanation as possible This enhances the value of the book in many instances especially where newly developed deas have caused a revision of previously accepted ones A partial list of subjects discussed includes recent work on pathogenesis of hypertension nectotizing nephrosis diabetic glomerulosclerosis diabetic retinopathy malignant phase of essential hypertension artificial kidney and newer pharm cologie remedies

The book is of value to those concerned with these conditions and will serve well as a textbook and reference book on the subject.

—WILLIAM S GEORGE Col MC USA

VERTEBRATE DISSECTION by Warren F. Walk J Ph D 331 p g
il t ed W B Sa der Co Ph l d lph P 1954 P c \$3 50

This laboratory manual is designed for students of biology as a guide to the dissection of certain vertebrate species and for use in the study of major transformations that have occurred during evolution It is not an encyclopedic text but it includes directions printed in bold type for the dissection and examination of various specimens in the laboratory The illustrations are clear well labeled and readily understood In the first three chapters the lower chordates the lamprey and the evolution and external anatomy of vertebrates are discussed In subsequent chapters the various systems are described in which the differences in fishes primitive tetrapods and mammals are covered

It is believed that this book forms an excellent dissection guide and generally accomplishes the objectives of the author

—THOMAS C. JONES Lt Col VC USA

TEXTBOOK OF ORGANIC MEDICINAL AND PHARMACEUTICAL CHEMISTRY 2d edition edited by *Charles O Wilson* Ph D and *Ole Gisvold* Ph D 805 pages illustrated J B Lippincott Co Philadelphia Pa 1954 Price \$10

This textbook is for undergraduate pharmacy students who have completed one year of organic chemistry In general the methods of synthesis and chemical relationships are discussed adequately The chapters on physiochemical properties in relation to biologic action and "metabolic changes of drugs and related organic compounds in the body (detoxication) are particularly valuable It seems unfortunate that the attempts to classify drugs sometimes according to their chemical properties and at other times according to their pharmacological actions has led to overlapping confusion and inaccuracies Dicumarol and related substances are discussed in the chapter on proteins as are dextran and heparin although heparin also is discussed in the chapter on carbohydrates A chapter on heterocyclic compounds includes a section entitled plant alkaloids but only a few alkaloids are discussed other chapters containing the information on morphine quinine atropine and many others The section on the purines omits 6-mercaptopurine and adenylic acid which are to be found in the chapter on proteins

Sometimes a disproportionate amount of space is devoted to older less useful drugs more space is devoted to the cinchona alkaloids in the chapter on antimalarials than to all the newer drugs As in many such texts the pharmacological discussions suffer from brevity and lack precision as for example the statement (pages 231 232) that barbiturates cannot cause addiction There are a number of errors in typography (mercaptopurine page 736 glucose page 594 salicylic page 600 chloresium page 215) and in bibliographic citation (on page 308 K K Chen instead of Chen and Schmidt on page 325 reference 8 missing) On pages 461 462 acetophenetidin and acetanilid are listed as N F on page 494 sulfapyridine is listed as U S P and sulfa guanidine and ephedrine are listed on pages 493 and 308 respectively as N F

It is to be hoped that careful editing of future editions will eliminate these errors in an otherwise satisfactory comprehensive and well written book —PAUL K SMITH Col USAFR (MC)

THE YEAR BOOK OF ENDOCRINOLOGY (1953 1954 Year Book Series) edited by *Gilbert S Go dan* M D Ph D 390 pages illustrated The Year Book Publishers Inc Chicago Ill 1954 Price \$6

This book is a most practical and useful collection of abstracts from the world wide literature for 1953 in the field of endocrinology Endocrinology has made such great strides in recent years that nearly every practitioner of the various specialties in medicine and surgery becomes involved in this intriguing and interesting field

The subject matter has been arranged according to the various endocrine glands and sex organs plus an excellent series of abstracts from articles on carbohydrate metabolism and diabetes mellitus as well as a summary on endocrine treatment of neoplastic diseases. Even though this book is a compilation of abstracts by various research workers the material is arranged coherently and more or less according to subtitles. A few representative illustrations and graphic charts are also included.

One of the most valuable features is the editorial comment following most of the more important or controversial papers presented. This book is recommended for all students and physicians interested in the most up-to-date information in the field of endocrinology. It would not serve as a reference book but it does present a great deal of practical information in concise form. —URHO R. MERIKANGAS Col. MC USA

BABCOCK'S PRINCIPLES AND PRACTICE OF SURGERY edited by K. I. C. J. na M. D. M. S. (Surg.) 2d edition. 1543 pages with 1006 illustrations. 10 of plates. Le & Febge Philadelphia Pa. 1954. Price \$18.

This is an extensive revision of the standard textbook of surgery Principles and Practice of Surgery by W. Wayne Babcock, Emeritus Professor of Surgery at Temple University School of Medicine, which was published in 1944. The book provides the student with an organized presentation of general surgery and the surgical specialties. The contributors have presented complete subjects in a clear and thorough manner. Emphasis has been placed on surgical diagnosis and treatment with minimal comment on details of technical procedures.

Recent advances in general surgery and the basic concepts have been included in the subject matter. A section on military surgery provides the potential medical officer with a working knowledge of military medicine and outlines the management of the wounded. Thoroughness of the subject matter is attested by the up-to-date chapters concerning the fast advancing fields of cardiac, vascular, and thoracic surgery including the surgical treatment of pulmonary tuberculosis.

One hesitates to find fault with a work of such general excellence. A typographical error on page 802 causes dihydrotachysterol (AT 10) to be referred to as a potent vitamin A derivative. This will confuse the medical student who has been taught that AT 10 is a derivative of a provitamin D, one stage before the formation of vitamin D in the process of its development.

Every library for medical students and every physician interested in general surgical conditions should own a copy of this comprehensive surgical text. The illustrations are good, it is adequately indexed, and there is an excellent bibliography at the end of each chapter.

—HERBERT T. BERWALD Col. MC USA

ARREST OF BLEEDING by *Jacques Roskam* M. D. 71 pages illustrated
Charles C Thomas Publisher Springfield Ill 1954 Price \$2.75

In this monograph the author presents a general but refreshing view of spontaneous hemostasis despite a probable oversimplification of the problem after exposure to the barrage of eponymic abbreviations found in hematologic literature. The subject matter deals with an analytic study of spontaneous hemostasis techniques and methods pertaining to bleeding time, physiologic study of spontaneous hemostasis, pharmacology of hemostatic agents, consideration of bleeding time in major and minor hemorrhagic disease, prophylaxis and general treatment of hemorrhage and treatment of thrombosis.

The text is lucid and the presentation smooth. Twenty-one figures of various types aid in emphasizing the salient features of the monograph. No index is given but its absence is not missed. Eighty-three separate references of which about 32 percent are in the United States and British literature are listed.

Outstanding features are the statistical approach to bleeding time and the use of the mean bleeding time. Concise definitions of hemophilic and "hemogenic" syndromes are given. The paradoxical effects of adrenalin on hemostasis are elucidated. Experimental basis for rejecting the use of cold and heat in the treatment of bleeding is afforded. Some of the medications of interest in the general treatment of hemorrhage discussed are adrenoxyl, naphthoquinones, sympathomimetic amines, pitressin and certain blood coagulants.

The monograph is stimulating and should prove of value not only to the internists but to any physician concerned with the problem of bleeding. It will make a fine companion piece to Quick's *The Physiology and Pathology of Hemostasis* which is listed in the bibliography.

—ARCHIE A. HOFFMAN Lt. Col. USAF (MC)

FUNDAMENTALS OF OTOLARYNGOLOGY by *Laurence R. Boies* M. D.
2d edition 487 pages illustrated. W. B. Saunders Co. Philadelphia
Pa. 1954 Price \$7

This excellent book is the second edition of a concise manual on the diseases of the ears, nose and throat. It is divided into 33 chapters with a new addendum on Transudate Disorders in Otolaryngology. The bibliographic references are well chosen and listed at the end of each chapter. Style, format, type and organization make for ready reference and easy reading. Drawings and illustrations contribute remarkably well to an understanding of the text content. Each chapter presents the etiology, pathology, symptomatology and generally accepted treatments. A thorough revision and some additions have been made by the author to bring the book up to date.

This book is highly recommended for the medical student, the general practitioner and all medical officers regardless of their specialty.

—WALLACE E. ALLEN Comdr (MC) USN

PSYCHOLOGY IN NURSING PRACTICE by Le t D C ow Ph D Al
C ow Ph D nd Cha l s E Sk Ph D 2d d u 435 page
Il trat d Th M m lla Co N w Y k N Y 1954

This edition has been completely reorganized in both content and style. It is the authors' intent to present the fundamentals of human behavior and human interrelationships in such a way that they have particular significance to the student nurse. The appendix includes the professional code for nurses and the reference list is up to date and varied. Material is made more meaningful by use of results obtained from pertinent scientific studies.

The expectation that a nurse should excel not only in mechanical skills but also in the art of conversation and other social sciences is emphasized. The following statement however makes one wonder if the authors are thoroughly familiar with nursing trends. When the bedridden patient is the only occupant she (the public health nurse) may render greater comfort by running an errand or by cooking and serving a meal than by giving a bedbath. Does a person call a carpenter for a leaking pipe? Would not a part-time domestic servant do a better job in this instance and at less cost to the patient or community? Could not the nurse be released to serve a greater number of people if in turn she taught the servant to give the bedbath?

In reading this book one gains the impression that the ideal nurse is a God-like person who knows just what to do and say at just the right time. Although it is mentioned I believe that much more stress could be placed on the necessity of accepting one's own feelings and emotions. Once these are recognized and accepted a nurse could function at top level efficiency regardless of her feelings.

This book could best be used as a stepping stone for further study. Areas of controversy would make good subject material for class discussion if used by an instructor who was well grounded in psychology and nursing sciences.—LEONA WEINER F r i L L A N C U S A

WHY WE BECAME DOCTORS d t d by Noah D F b c nt M D 182 p g
Gru & Stratt I N w Y o k N Y 1954 Pri \$3.75

This is a book to be nibbled. It is a paramedical discussion of the circumstances which led many great physicians to enter their profession. Although we speak of medicine as a chosen profession it is apparent from this book that happenstance and propinquity have their roles in the student's determination that he should become a doctor.

This volume should be available at bedtime as a sort of mental snack before sleep. It may also be taken by a doctor. Like salt it is wonderful with other foods but quickly satiates the taste if too much is taken at one time. It is a book that stimulates some honest evaluation of the reader's own motives in choosing medicine. It will open a door to further study of the fascinating history of medicine.

—VINCENT M. DOWNEY Lt Col USAF (MC)

PLAGUE by *R Pollitz* M D 698 pages illustrated World Health Organization Palais Des Nations Geneva Switzerland 1954 Price \$10

This comprehensive thorough and up-to-date monograph on the plague problem is useful for clinicians epidemiologists and workers engaged in plague research. Not a revision it modernizes and replaces the most recent publication in the English language concerning plague which was compiled in 1936 by Wu Lien-teh J W H Chun R Pollitz and C Y Wu.

The recent spectacular advances in the treatment and control of the disease are ably incorporated in the text from various studies by the author previously published in the *Bulletin of the World Health Organization* and revised grouped and reprinted in single book form. While the incidence of plague has markedly decreased within recent years and in some of the endemic centers has ceased to be manifest the author clearly points out that it is not yet possible to be complacent about the plague situation in the world today even though modern scientific advances have shown that the "Black Death" is now both a normally curable and a thoroughly controllable disease. The vast primary reservoir of infection among wild rodents throughout certain areas of the world apparently will remain unassailable for a long time and concerted efforts to combat the disease must continue unabated.

The book is well documented both the index and chapter references being internationally complete hence the usefulness of this modern book as a complete reference work on the subject of plague.

—WALTER R deFOREST Lt Col MC USA

PRACTICE OF ALLERGY by *Warren T Vaughan* M D revised by *J Harvey Black* M D 3d edition 1164 pages illustrated The C V Mosby Co St. Louis Mo 1954 Price \$21

This textbook of allergy is a comprehensive well written authoritative coverage of the subject. Throughout the volume extensive changes have been made from the previous edition. New material has been added, including discussions of the use of cortisone and ACTH pulmonary function tests and treatment of poisonous dermatitis. The chapters on aerobiology and pollen surveys and the discussion of allergy associated with fungus infections are excellent. In the section on seasonal pollen therapy however the text is incomprehensible.

The author is careful to present several points of view on controversial subjects. For example the lack of reliability of skin tests to foods is stated, but the fact that many allergists still use them and "find them helpful" is presented without comment. This approach makes the book particularly suitable as a reference volume for the general practitioner and internist not practicing allergy exclusively. An extensive bibliography good index and detailed table of contents increases its value as a reference book for actual treatment of patients with allergy. —WARREN H. DIESSNER, Col. MC, USA

THEORY AND PROBLEMS OF ADOLESCENT DEVELOPMENT by D d P
 A sub l M D Ph D 580 p g Gr & St tion In N w Y rk
 N Y 1954 P \$10

This volume presents an excellent formulation of a consistent theory of adolescence and includes general principles of developmental psychology in a manner which should stimulate further research and the formation of empirical conclusions to test their validity. The author has drawn well on the research of the past half century. The emphasis on a need for more systematic attention to preliminary experimentation to test strict theories is a welcome departure from the large scale long range studies on poorly integrated hypotheses in the study of adolescent development.

Focusing on the unique characteristic of the adolescent phase of personality growth the author presents a dynamic concept that includes the cultural influences and stresses on the developing individual personality. The process of reorganizing personality aspects particularly during adolescence manifests certain basic uniformities from one culture to another because of common elements in the psychology of transition as well as psychosexual maturation the biologic role of sex and the new traits associated with adult status in the community.

Extensive well selected references are included as well as a bibliography at the end of each chapter. Well written and organized the book is considered to be very suitable as an advanced text in adolescent psychology for graduate students and highly desirable as a reference library item for psychiatrists clinical psychologists social workers and pediatricians.

—FREDERICK A ZEHRER Lt Col MSC USA

ADMINISTRATIVE MEDICINE edited by Georg S St o M D 164
 page J h Ma y J F nd t N w Y k N Y 1954 P \$3

This volume is comprised of transactions of the second conference of a series of conferences on administrative medicine by a group of about 20 outstanding leaders in this field. Among the conferees were representatives of most of the branches of medical science concerned with the administration of medical affairs.

The subtopics also discussed were main components of administrative medicine home care programs and the health services of the Department of Health for Scotland.

The transaction of this conference serve to focus attention on the great need for improvements in the field of administrative medicine and this book should prove of interest and value to those concerned with the administration of all types of medical programs. This volume should be of great value to the graduate student who is preparing for future assignments in the field of administrative medicine.

—LUCIUS G THOMAS Col MC USA

ORAL HYGIENE by *Roll W Bunting D D Sc d C H b o m* 2d
 edition thoroughly revised 283 p g with 204 illustrations
 color plates L & F b g Philadelphia, Pa. 1954 P \$5 50

This book is devoted to the teaching of oral health which here entails those clinical manifestations of the most common oral diseases and the methods by which such diseases may be prevented or treated and the duties and services performed by the dental hygienist It is Bunting's opinion that the basic concepts of preventive dentistry presented in this textbook should be of mutual benefit to both dental and dental hygiene students

This new edition of this book which has been thoroughly reorganized is a compilation of the experience and knowledge of nine contributors It is profusely illustrated and contains 12 chapters nine of which are followed by a bibliography The subject matter covered includes Fundamental principles of oral hygiene anatomy of the mouth and teeth histology of the oral structures physiology of the mouth organic and inorganic accretions on the teeth dental caries periodontal disease stomatitis oral prophylaxis role of the dental hygienist in public health dental health education and training and licensure of the dental hygienist

That the authors had both the dental and dental hygiene student in mind at all times is evidenced by the clear and concise wording and the numerous illustrations It is the reviewer's opinion that this text will be invaluable to both dental and dental hygiene students

—HUBERT B PALMER, LL Col USAF (DC)

NUTRITIONAL FACTORS AND LIVER DISEASES Edited by *Roy Wald M*
 347 p g illustrated Third New York Academy of Sciences New York
 N Y 1954 Price \$4 50

This publication describes biochemical research in experimental animals and coordinates these findings with the results of pathologic research obtained from humans with dietary diseases of the liver As the proceedings of a conference in May 1954 it includes a valuable review of experimental pathology and an interesting summary of the etiology and pathogenesis of cirrhosis and primary carcinoma of the human liver Investigations of experimental dietary diseases of the liver in North America and Europe and the work in human nutritional conditions in Africa (Kwashiorkor) Latin America and Asia also are reported

This monograph would be of considerable interest to the internist specializing in liver dysfunction and to the graduate experimental biochemist The presentation of current thought and experimental data was found to be most interesting from a definitive point of view of hepatic function The conclusions to be drawn from this collection of research and reports indicate that more careful studies are necessary before the true relationship between experimental and human dietary liver injury can be ascertained —WILLIAM H LEE, Maj. USAF (MSC)

ORAL AND FACIAL DEFORMITY by *C. Kerr McNeil* Ph D L D S 127 pages illustrated Pitman Publishing Corp New York N Y 1954 Price \$5

The title of this volume implies coverage of the entire field of oral and facial deformity but the work is primarily a treatise on cleft palate of congenital origin. Only brief mention is made of acquired facial deformities. The volume limits its scope to the roles of the prosthetist and orthodontist and relates the author's experiences, results, and research in the field. The book consists mostly of case histories which are brief, sketchy, and sometimes too inadequate to convey to the reader the problems involved. Although the photographs of the patients are good, those of the models and prosthetic appliances often are not shown in sufficient detail to clarify the technical procedures used.

The chapters concerning the historical data and etiologic factors are especially well presented. The author's success in closing palatal perforations and clefts through stimulation of the tissue by orthodontic and prosthetic measures without resorting to operation is a new procedure and warrants further investigation. His use of extra and intra oral appliances at an early age to shape the alveolar ridge is a valuable contribution to treatment of this condition.

This volume will be of interest to those concerned with the problem of the cleft palate but will be of most value to the specialist treating patients with this defect by prosthetic means.

—ROBERT B SHIRA Col. DC USA

THE BIOLOGY OF MAN by *John S Hensell* Ph D 440 pages illustrated. The Blakiston Company Inc New York N Y 1954 Price \$5.50

This is an introductory college biology text which has a clearly outlined objective—to present the major principles of animal biology as they apply to man. I believe the author has limited his audience unnecessarily because the book so understandably and accurately introduces the subject it should be greatly appreciated by the advanced high school student and the general public. The latter have been bombarded by much less readable and often inaccurate material.

The subject is presented orderly and accurately with definitions of terms logically and clearly located. The life cycles of man and of lesser organisms are discussed from the cellular to the adult stages and man is related to all plant and animal life in a comprehensive chapter. Another sequence of chapters pertains to anatomy and to the regulation, maintenance, and control of man and describes how the body reacts to harmful disease agents.

The book is indexed adequately but references are few. In a classroom this may be overcome by supplemental reading assignments. The use of this type of book in educating and training personnel in the armed services is highly recommended. —RICHARD E. OGBORN Maj MC USA

MODERN TRENDS IN DERMATOLOGY (Second Series) edited by R. M. B. MacKenna, M. D. 338 p. Illustrations. P. B. Hoeber, Inc. New York N. Y. 1954. Price \$12.

This book the second in a series begun five years ago represents the combined efforts of 22 well known contributors on 17 different subjects. The object of their collaboration is to present a summary of the more important advances in dermatology during the past five years. The subjects covered are divided into chapters on ecology in relation to dermatology, critical evaluation of psychosomatic medicine in relation to dermatology, cutaneous sensibility, physiology and functional pathology of the skin, blood factor in lupus erythematosus, cytodiagnosis in dermatology, tuberculous disease of the skin, arcoidosis, critical appraisal of modern trends in leprosy with particular reference to advances in immunology, current problems in cutaneous bacteriology, allergy in relation to dermatology, cross sensitization phenomena, helminths and the skin with special reference to onchocerciasis, recent developments in the use of antibiotics, corticosteroids and ACTH in dermatology, and Beta ray therapy.

The text is well written and contains the best features from the articles reviewed. All of the articles are listed in the references at the end of each chapter. This work cannot be considered a text but rather a source book and as such, valuable to anyone interested in more extensive reading in any one of the subjects covered. While one may not agree entirely with the selection of subjects, careful reading is sure to be repaid by stimulation of thought and interest. It is recommended primarily for dermatologists. — JOHN D. WALTERS, *Comdr (MC) USN*

A FORMULARY FOR EXTERNAL THERAPY OF THE SKIN by Gilbert A. Frazier, M. D. and Irvin H. Blank, Ph. D. 118 p. 8 illustrations. Charles C. Thomas, Publisher, Springfield, Ill. 1954. Price \$3.25.

This formulary is now official throughout the Massachusetts General Hospital where it has proved adequate in all respects according to the authors. It was devised in an effort to produce a simplified formulary for topical treatment of the skin. Such drugs as calamine, boric acid, phenol, antihistamines, and antibiotics are omitted either because they are potentially dangerous or there is inadequate proof of their efficacy, or because as in the case of antibiotics they are more effective if given by routes other than topical. Internal therapy in dermatology being outside the scope of the authors' subject is not included in this formulary, although they do not deny its importance and necessity in many conditions.

Simplicity and rationality is the keynote. Tepid tap water alone is used for baths and compresses. Cleanliness of the skin is emphasized and the use of detergents (plain soap or synthetic detergents) for this purpose is stressed when not contraindicated. About 14 active medications are used alone or in combination in various vehicles for all skin conditions.

The authors stress the importance of the physical-physicochemical properties of the vehicles used and provide an excellent chapter with diagrams explaining their properties. Some of the vehicles contain various emulsifying and wetting agents. Complete formulas of the vehicles and the names of the manufacturers of the less well known ingredients are given. Principles of treatment are discussed and selected references are listed at the end of each chapter.

The formulary appears to be a step in the right direction to put local dermatologic therapy on a less esoteric basis and make it more applicable for general use. Most dermatologists would agree however that the list of topical active medications used is too simplified omitting such valuable drugs as hydrocortone acetate, vioform, gamma isomer of hexachlorocyclohexane and others that come to mind. The book is especially recommended for the nondermatologist interested in possessing knowledge of rational simplified therapy for skin diseases.

—VINTON HALL, *Comdr (MC) USN*

THE PSYCHIATRIC AIDE His Part in Patient Care by *Alice M. Robinson, R. N. M. S.* 186 pages illustrated. J. B. Lippincott Co. Philadelphia Pa. 1954. Price \$3.

Because of increasing emphasis on proper care of the mental patient this text for the psychiatric aide is a valuable addition to our present references on the subject. Many of the duties related to the care of mental patients cannot be classified strictly as "professional." The number of nurses trained in psychiatry is far from adequate and the well trained psychiatric aide can be used to good advantage in carrying out routine procedures and assisting in more technical responsibilities.

The material is presented in a simple, easily read and understood form for both the psychiatric aide and the student nurse. Each chapter is preceded by an introductory paragraph analyzing the feelings of a psychiatric aide as he gains new experiences.

The illustrations are the weakest part of the text. Many of the author's ideas could have been expressed more effectively. The appendix includes a list of references, definitions of terms used in the text and a simple classification of mental illness.

—ANN M. WITCZAK, *Major, ANC USA*

THE DYNAMICS OF VIRUS AND RICKETTSIAL INFECTIONS edited by *Frank W. Hartman, M. D., Frank L. Horsfall Jr., M. D., and John G. Kidd, M. D.* 461 pages illustrated. The Blakiston Co., Inc. New York N. Y. 1954. Price \$7.50.

Thirty three eminent investigators in the field of virus and rickettsial infections contributed papers to this symposium held at Henry Ford hospital in Detroit in October 1953. Customary topical boundaries based on taxonomy or host specificity were abandoned in favor of an outline based on dynamic concepts and the various agents specifically mentioned in the papers served essentially as experimental vehicles.

Publishing the proceedings of a symposium is under any circumstances a trying task. The editors and publishers of this volume are to be congratulated for having produced an attractive permanent volume carefully proofread with well-reproduced tables, charts, and photomicrographs with sufficient promptness to maintain the timeliness of the material.

One of the chief objectives of the symposium, according to the statement of the editors, was to provide an occasion for the exchange of ideas and information between workers in different areas of the virus and rickettsial field. Another objective, perhaps of greater importance, was also attained because the symposium provides a suitable basis for a well-rounded concept of the biology of viruses and rickettsiae which can be stated in terms applicable to all living organisms.

The papers are divided into five groups: mechanisms of virus and rickettsial infections; ecology and pathogenesis; mechanisms of immunity; laboratory diagnosis; and approaches to prophylaxis and therapy. The contributions in the section on mechanisms of infection are of particular interest, especially at present, because they are new and less generally known and have significant implications regarding inheritance, growth, errors of intermediary metabolism, host invasion, virulence, and other problems. The papers concerning the development and use of attenuated living vaccines and the use of chemical prophylaxis and therapy are of especial interest.

Many readers may find themselves in unfamiliar territory more than once in this book, but it is stimulating and although not comprehensive provides insight into current problems in the important field of virus and rickettsial diseases.—JOHN K. SPITZNAGEL, *Maj, MC USA*

THE SCOURGE OF THE SWASTIKA by Lord Russell. IL 259 page. Philosophical Library. New York, N. Y. 1954. P. \$4.50.

This book is an account of many of the German war crimes compiled from evidence given and documents produced at various war-crime trials and from statements of eye witnesses. Lord Russell, as Deputy Judge Advocate General, British Army of the Rhine, was a participant in many of the trials and investigations and had access to the records in most of the others. The importance which this subject has for the author is attested by his decision to resign on 8 August 1954 as Assistant Judge Advocate General of the Forces in London rather than drop publication of the book.

The ill treatment and murder of prisoners and populace of occupied countries, slave labor, concentration camps, and the special treatment accorded Jews are described in this book. Under these headings we are told how, as Sir Hartley Shawcross put it, "on the lowest computation twelve million men, women, and children were done to death."

Not in battle not so passion but in the cold calculated deliberate attempt to destroy nations and races to disintegrate the traditions the institutions and the very existence of free and ancient States Twelve million murders murders conducted like some mass production industry

This appears to be a conservative factual account of the atrocities we have all come to associate with the Nazi regime There are 28 illustrations with an adequate index and bibliography

—MARIO E ROUDEBUSI, *Calif (MC) USA*

GUIDE FOR SAFETY IN THE CHEMICAL LABORATORY Prepared by and published for The General Safety Committee of the Manufacturing Chemists Association Inc Washington D C 234 pages illustrated 39 plates D Van Nostrand Co Inc New York N Y 1954 Price \$4.25

This manual is compiled primarily for college university and industrial chemical laboratory staff members student bodies and co-workers however there are several chapters which apply to high schools and elementary technical training schools where chemical laboratories are in existence or where chemicals may be handled

The book is concise Mandatory procedures are set down using the word "must" while desirable procedures are set down using the word "should" This makes it easy for the reader to determine where some leeway in procedures is acceptable The material is very well organized which permits quick reference to discussion of particular problems or hazards

Excellent photographs of some of the most desirable features of modern industrial chemical laboratories with clear detail photographs showing proper methods of some operations are included Adequate references are given in a separate section I believe it would be desirable to include reference to the series of handbooks published by the National Bureau of Standards on the recommendations of the National Committee on Radiation Protection These are a very desirable addition to the excellent chapter on radiation safety

—JOHN S GILL, *Army Chemical Center*

THE TREATMENT OF THE ALCOHOLIC, by Fitz Kent M D 130 pages Charles C Thomas Publisher Springfield Ill 1954 Price \$3.50

Nothing is added to the knowledge of chronic alcoholism or its treatment by this small volume However the author a well known psychiatrist has given in a brief and concise form a worth-while summary of some of the problems confronting the therapist in alcoholism The book is directed toward lay readers although the physician and especially the general practitioner may well find it to be a useful guide to treatment The author presents some of his personal viewpoints as regards treatment and the chapter entitled "Psychotherapy" is of especial value —CHARLES T BROWN, *La Col MC USA*

LECTURES ON THE SCIENTIFIC BASIS OF MEDICINE V I m II 1952 53

by B t h P tgrad t M d al F d u Uni ty of Lo don
 380 p g II tr t d 29 pl t P bl b d by th Athl P t th
 S H L d w l 1954 D tr b t d U S A by J h
 d G ff l c N w Y k N Y P \$6

This volume is the second in a series devoted to presenting a review of the most recent advances in basic science in medicine in lecture form. The book is well printed but the placing of all the cuts in a section at the end of the book somewhat impairs its usefulness.

The current series of lectures is well selected and is guaranteed to stimulate the thinking of its readers. Because the earliest lecture was delivered in October 1952 and the most recent in February 1953 the data are recent enough to be news to most readers who do not keep in close touch with the literature of the basic sciences. Each of the lectures has been delivered by a recognized authority on the subject and is complete in itself with adequate bibliographic references provided.

The book is recommended for any busy physician who is interested in keeping abreast of progress in fundamental research and in stimulating himself to thought about improvement in medical practice. The book should be of particular interest to students preparing to appear before specialty boards because it presents in easily assimilable form basic data which is of importance to every specialty in medicine.

—RYLE A RADKE Col MC USA

PERIODONTIA Clinical Pathology and Treatment of the Periodontium

by Edg D C l dg M S D D S d M y d K H M S
 D D S 2d ed t 384 pag 424 ill tr t on 250 figur d
 2 l pla L & F b g Pb lad lph P 1954 P \$7.50

This concise text was written principally for dental students and general practitioners of dentistry as a reference to the fundamentals and the principles of treatment of periodontal disturbances. The book is well organized, being divided into four major sections of 14 chapters: prevention and classification of periodontal diseases; treatment of inflammatory changes in the gingival and periodontal tissue; treatment of retrogressive changes in the periodontal tissues; and correction of occlusal disharmony and care of the oral tissues.

The illustrations are excellent and the captions are concise and clear in meaning. The general format is conducive to ease of reading. The book is not encyclopedic in scope and is obviously intended primarily as a teaching text and not as a reference book.

In the discussion of acute necrotizing gingivitis the recommendations for the use of caustics seems questionable and insufficient importance is attached to the early debarkement of the mouth in the treatment program. The discussion of the surgical method of pocket elimination is limited with reference only to the technic of gingivectomy.

This volume is a valuable addition to periodontal literature.

—SAM W HOSKINS J Maj USAF (DC)

THE CARE OF THE AGED (GERIATRICS) by Walford W. Theulis M D
6th edition 832 pages with 155 illustrations The C. V. Mosby Co
St. Louis Mo 1954 Price \$15

This is the sixth edition of a general text covering all phases of medical management of the aged. In this day of increased longevity one is a little taken aback by the statement that the practice of geriatrics begins when the patient reaches the age of 40.

Perhaps many sections could have been brought a bit more up-to-date. For example liver extract is discussed in the management of Addisonian pernicious anemia. Tetramycin is the most recent antibiotic found discussed in the text. In the management of hyperthyroidism no reference is made of I^{131} used as a diagnostic tool and particularly as it is used in the therapeutic management of the aged. Concurrently conventional chemotherapy is omitted from the management of pulmonary tuberculosis. Rather the author discusses somewhat extensively the use of collapse therapy.

In the management of syphilis 720 mg (1 200 000 units) of penicillin every three days for three or four injections is recommended. Many would believe that this is inadequate antisyphilitic therapy. No reference is found to the use of the Treponema mobilization test when syphilis is suspected. While benemid is mentioned in chronic gout therapy no reference is made to its use in the acute attack. The advice for the elderly to restrict periods of reading to only five minutes and then to rest would seem to be a little impractical. Considerable discussion is given to foci of infection perhaps somewhat out of proportion to the conventional thinking.

The author does not urge the use of oxygen early in myocardial infarction. In general the discussion on nursing care in geriatrics is excellent. The instructions to physicians in the avoidance of myocardial infarction are excellent for everyone in the profession.

While in general the author fulfills his objective it is believed that the reader would not feel satisfied by the newness of many types of therapeutic management. The book would perhaps fulfill a need for a great many physicians in general practice.

—FRANCIS W. PRUITT Col MC, USA

A MANUAL OF OTOTOLOGY RHINOLOGY AND LARYNGOLOGY by Howard Charles Ballenge M D and John J. Ballenger M D 4th edition enlarged and thoroughly revised 365 pages 136 illustrations and 3 color plates Lea & Febiger Philadelphia Pa 1954 Price \$6

The fourth edition of this well known manual is well organized into sections referable to the nose pharynx larynx and ear. It is well indexed so that specific subjects are easily located making the book an easy to use reference manual. The material is written in a style conducive to easy and pleasurable reading. Considering the brevity of the book much information is available.

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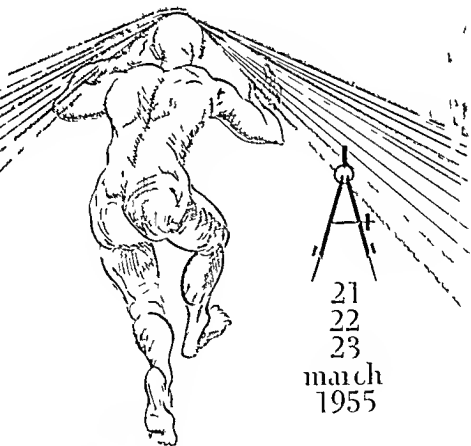
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WASHINGTON 1955

Monthly Message

I wish to pay tribute to an intimate personal friend of almost 30 years Dr Isidor S Ravdin who was recently appointed by the President as the first major general in the Army Medical Reserve a promotion and reward richly deserved This promotion not only paid personal tribute to General Ravdin but through him recognized the increased stature of the Medical Reserve of this nation The appointment from the President was read to Dr Ravdin his wife daughter and her husband and a large group of officers and friends by General George Armstrong in his office on 15 February 1955

In January 1942 while visiting Dr Ravdin in Philadelphia and casting about for my own role in the war he took me to one of the organization meetings at the 20th General Hospital following which I returned to New York with my mind made up and shortly thereafter was asked to help form the 9th Evacuation Hospital from the Roosevelt Hospital in New York Dr Ravdin was at first chief of surgery and later commanding officer of the 20th General Hospital which served for many months with great distinction in the China Burma India Theater and during this period he received his promotion to brigadier general for outstanding services in the theater not only to his fellow Americans but to the entire allied group Ever since his return from the war he has continued his active interest as one of the consultants to the Surgeon General of the Army and as a member of the Armed Forces Medical Policy Council and more recently a member of the Council of the Assistant Secretary of Defense (Health and Medical) where his advice and enthusiasm have been invaluable Last autumn he was elected chairman of the Board of Regents of the American College of Surgeons and as some of you may know he has been honored in his own home city Philadelphia by the University of Pennsylvania with a new surgical building the I S Ravdin Institute

Those whose privilege it is to know Dr Ravdin and work with him will recognize at once the apt description of him which was the title of an article about him in the University of Pennsylvania *Medical Bulletin* December 1954 And "Stab My Spirit Broad Awake" a quotation from "The Celestial Surgeon" by Robert Louis Stevenson The medical services not only of the Army but of all the armed forces are to be congratulated by this public recognition of the value of General Ravdin to us all

Frank B Berry

FRANK B BERRY M/D

Assistant Secretary of Defense
(Health and Medical)

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A 15 item questionnaire was mimeographed for distribution (fig 1) In interviews with the commanding officer of each ship the objectives of the survey were discussed and his co-oper

MOTION SICKNESS QUESTIONNAIRE

U S S _____

Th M d l Off te y o- pe tion i bt g l a b l i f m t i o n c m g
th p al f e kn th C m m d Pl an w th q t s th ght
fully lea ly d h tly k o r p i A w to qu t o N 8 t req d
l y d re

1 N m (p t) _____ R to ank _____

2 Ag _____ 3 T t l t m l t a y vi _____

4 H w m h d ty h y h d ghly _____

5 H w long h y be board th h p ves i f th i _____

6 I wh t m p a r t m t you berth (G mb) _____

7 Y d w y w th t a t s _____

8 Wh t y l and/or t i o n l b k g r u n d (G r m a n I t a l J w h E g l i h
N g t e s t e) _____

9 D o y g t a s k N O a s o n l y O f t e D t k n w _____

10 O r s k N O c l l y O f t O l y h i d _____

11 D o y g t a s k (A m y d N O T t a k d r a m a m t h a n t k n
m d)

N O c l l y O f t e A l m t l w y _____

I f th w t o q t i o n N 1 1 k p t h r e t f t h q u t

12 I f you t a k d r m m d o y o u g t a s k h _____

O l l y O f t e A l m t l w y _____

13 I f you (o r h d) d m a m l t h t m b f d a m m p l l
h h a p p m t e l y y o u d l y I f t d o f t h y d d t h l p y o u p t
l r o u d t h m t y t r e d o n d y

O 4 6 8 10 12 M o r

14 I f C O R T R O N 14 h a n o p p o r t u n i t y t o t r y o u t w d g f o r t e p o b l l
g t k w l d y b e w i l l i n g t o t a k p a r t t h p m t

l N M y b _____

15 I f a n d w h y o u g e t k b o d t h h p t h y t h g b o u t y o w
l g q u e o r t a t h h y o u d f t e l y b l c o t r b t t o y b e g l l
(F a m p l l o n e d p o d o r l k f f h m k g b t
h t o r h m i d i t y t h e r a p p g l l t e)

t h b k o f t h p p e f o r y a n d a n y t h c o m m t l y a r t o m a k

F g u 1

ation enlisted The questionnaires were then distributed via the division and petty officers usually at morning quarters The forms were collected in similar fashion during the next few days

The questionnaires were returned to the investigator during the third and fourth weeks of January 1954. All the forms were tabulated by the same person. None was rejected on the grounds of unreliability or apparent bias. In rare cases, it was apparent that a small group of men working and living in the same area had collaborated on identical answers. However, the total number of ambiguous, facetious, or obviously hostile questionnaires was gratifyingly low (about two percent in all), especially considering the wide latitude of comment permitted by the method. Implicit in the great majority of comments was a spirit of active interest and co-operation.

Of 1,100 men assigned to the Squadron, questionnaires were returned by 699, or 63 percent. At any given time, a significant proportion of a ship's assigned complement can be expected to be on leave or in training elsewhere. Aside from avoiding the Christmas leave period, the investigator took no measures to ensure a high response rate.

By individual ships, the lowest rate of response was 52 percent of the assigned complement, the highest, 86 percent. In the latter case, the forms were returned in exact alphabetical order, and it was apparent that vigorous efforts had been directed toward securing a questionnaire from every man aboard. This vigor was negatively reflected by a comparative increase in the number of omissions and inconsistencies in the papers received. However, the exceptionally large sample from this ship was not characterized by any significant variation from the reported incidence of seasickness in the Squadron as a whole. This would suggest that the sample of 699 is a relatively unbiased reflection of the total population of the Squadron.

In regard to seasickness, the questionnaire offered a choice of four answers: "never," "occasionally," "often," or "almost always." Incidence of seasickness is recorded in terms of these four classes. "Almost always" seasick is considered synonymous with "chronic" seasickness.

1. INCIDENCE OF SEASICKNESS

Of the 699 men returning questionnaires, 12.7 percent stated that they were habitually seasick, while 38.7 percent never were seasick (table 1). Among the many factors which must be considered in evaluating this frequency of seasickness are age of subject, sea experience, past history of motion sickness, position of berth on board ship, and the patient's own opinion as to causative or aggravating factors. These factors will be discussed separately.

FACTORS IN PRODUCTION OF SEASICKNESS

Age and Seasickness Twenty two years was the median age for the Squadron. About 80 percent of the men were less than 26 years old. In the men under 26 there was a slight and statistically insignificant trend favoring diminished chronicity of seasickness as the men approached the age of 26.

TABLE 1 Incidence of seasickness suffered among 699 men on destroyer escort

Category	Number	Percent
Never sick	268	38.7
Occasionally	268	38.7
Often	68	9.8
Almost always	88	12.7
Not stated	7	0.1
Total	699	100.0

TABLE 2 Age and incidence of seasickness as correlated with duration of service

Age	Number of personnel	Never sick		Almost always	
		Number	Percent	Number	Percent
18-25	570	199	35	80	14
26-50	122	66	44	6	5

Increased experience at sea was a variable not excluded from the data in table 2. Of necessity accumulation of sea experience was dependent upon advancing age at least in the 18- through 25 year group. A marked disparity was noted when chronic seasickness in the 18- through 25 year group was compared with that occurring in men from 26 to 50 years of age. The incidence of chronicity dropped by more than 50 percent. Selection however played a part in the change noted after the age of 26. Chronically seasick young men may not choose to grow old in the Navy.

Sea Experience Only 20 percent of the men in the Squadron had had less than 12 months sea duty; however this group accounted for one third of the men reporting chronic seasickness. Table 3 presents the situation of those men under 26 who were in their first and second tours of sea duty. A decrease in chronic seasickness seemed to be associated with sea experience of 12 months or more.

Past History of Motion Sickness Table 4 shows the incidence of seasickness in men who as children or adults had been carsick, airsick, or both. Also indicated is the incidence of seasickness among those who had *not* experienced other types of motion sickness. Those who had no air experience are included in the latter class.

TABLE 3 *Length of sea duty and incidence of seasickness in men 18 through 25 years of age*

Duration of sea duty (years)	Never seasick		Almost always seasick		Number duty class
	Number	Percent	Number	Percent	
Less than 1	39	26	32	21	149
1 to 2	52	37	12	9	139
2 to 3	93	38	33	13	247
Total	184		77		535

The sample was selected to minimize two extraneous factors: age and sea duty. With respect to age, men in their late 20's are said to show increased resistance to severe seasickness.⁴ Regarding nautical experience, there was an apparent alteration in the incidence of seasickness during the first year of duty afloat. Accordingly the sample in table 4 includes only those men under 26 with at least 12 months' sea experience.

The class of men with a history of carsickness or airsickness included less than one third of the men in the sample. Within this class, however, were 70 percent of the chronically seasick men. Of the men in this class, less than one in 10 was immune to sickness at sea. On the other hand, when the men who had never experienced car or airsickness were considered, about half were completely unaffected by seasickness.

Seasickness and Berthing Compartments Of the men in the survey 505 were berthed in the three after living compartments of the ships. Among the three compartments there was no significant variation with respect to the numbers of men "never," "occasionally," "often," or "almost always" seasick.

The pooled incidence of chronic seasickness in the three after compartments was compared with that reported in the forward berthing compartment. In the forward compartment, the incidence of chronic seasickness was significantly higher, although this compartment was roughly the same distance forward from the center of the ship as the three other living compartments (con-

sidered as a unit) were aft. However young nonrated men in the deck division were generally assigned to the forward berthing compartment. The after compartments were populated largely by rated men and strikers with greater sea experience. Already noted is the effect of accumulated sea duty upon reported incidence of chronic seasickness. Accordingly the high incidence of chronic seasickness in the forward compartment was probably due in part, to selection.*

Analysis of the data with respect to place of work on the ship was not considered profitable due to small samples and numerous variables. However the frequency of adverse comments from close restricted areas such as Combat Information Center and Radio Central was impressive.

Patients Evaluation of Factors Participants in the survey were requested to comment concerning those attributes of their living quarters or place of work believed to contribute to their tendency to become seasick. The attributes and the number of persons noting each are recorded in table 5. (The following examples were mentioned in the question itself: closed space, odors, lack of fresh air, smoking, vibration, excessive heat or humidity, and others appearing ill.) Table 5 may throw some light on which aspects of creature comfort are considered important by shipboard personnel though they may not necessarily contribute to seasickness. Particularly significant, however, is the fact that those items are, by definition, those which personnel aboard the ships consciously link with seasickness.

This part of the report may be summarized as follows: A questionnaire regarding seasickness was returned by 699 of 1100 men in a destroyer escort squadron. About one of every eight was almost always seasick, and only about 39 percent claimed they never were seasick. The others, about half the total group, were "often" or "occasionally" sick. This finding was related to age, years of sea experience, and past history of motion experience, in that a higher incidence of seasickness apparently occurred in younger men with less sea experience and a history of motion sickness in the past.

II PREDISPOSING FACTORS

Chinn³ has delineated the significant differences between civilian and military motion sickness and their implications. In civilian medicine motion sickness is usually a short-term inconvenience. In the military, however, the patient is a hazard to himself, to the effectiveness of training operations, and to the success of the command operation. This is true of any branch of

Men who had been on sea duty more than 45 days, the first group, compared to only 20 percent of the first group.

TABLE 4 *Seasickness and history of other motion sickness in men 20 through 25 years of age with at least 12 months sea duty*

History	Incidence of seasickness						Number of men		
	Never seasick		Occasionally seasick		Often seasick			Almost always seasick	
	Number	Percent	Number	Percent	Number	Percent		Number	Percent
Admit air and ear sickness	5	5	42	40	23	22	34	33	104
Deny air and ear sickness	139	51	105	39	14	5	14	5	272
Total									376

military service in which the performance of duty involves exposure to conditions productive of motion sickness however the significance of motion sickness in the naval service is particularly striking Unlike the airman, for example the sailor does not necessarily secure respite from motion in a matter of hours In addition to being his place of work the ship is virtually the seaman's home for weeks and months

TABLE 5 Co t r b t r y f a c t o r s a s k n o w n c o m p l d / m 385 a s w
t q u a n t i t y N o . 15 q u a n t i t y

Type f i l t e r	Spec i f i c f a c t o r	N u m b e r o f p e r s o n s a f f e c t e d	T o t a l
Odor	Smoking D i f f e r e n t f o o d Cooking o d o r m e l l f f o o d P e r m i t t e d f o r d r i n k i n g l i v i n g s p a c e W a r m i n g g a l l e r y w h e n I n a d q u a n t i t y a l l i n N e p e f d	45 26 15 3 1 2 38	130
V i s i b i l i t y	L a k e f i f t s h i p	114	114
L u n g c o m m o d i t y	C l e d p e r s o n s m a l l m p r m R e t u r n d e p a r t d t y t e	50 2	52
T e m p e r a t u r e	E h o r h u m d i t y	23 20	43
S h i p m o v e m e n t	V i b r a t i o n	17	17
Food	C r i t i c a l f o o d d r i n g g h w t h g r a y f o o d p k s a u s g S h i p m o v e m e n t d o n a n g u n g T h m l	2 1 1	4
M i l l a o u f t o	O d o r p p e r s o n s m a n u g T h i n k i n g b o u k n N a s L a k e f i f t p H g e G e r l t m p h e r T h d b e E f l q t h g h b e f a l n g	14 2 3 2 1 1 1 1	25
T o t a l			385

The development of seasickness is associated with a logical progression of well known signs. Subjective visceral uneasiness is closely followed by generalized sweating and pronounced facial pallor. Nausea proceeds apace, and frank vomiting ultimately occurs. Vomiting is a convenient endpoint for certain motion sickness studies. It is, however, too rigid a measure of disability for the crew aboard a highly organized fighting ship wherein continuing individual initiative is of vital importance. Very early in the progress of the motion sickness syndrome there occurs a subjective change that is of far greater significance. This change consists of an alteration from a positive to a decided negative attitude.

For the moment, conjure up a patrol vessel bobbing on the Atlantic frontier. It is nominally peacetime. A radarman striker, mesmerized by the abundant tracery of his scope, awaits an enemy he really doesn't expect to find ("Intense interest may hold symptoms of seasickness in abeyance"). The radarman is vaguely uneasy ("In the Navy mild forms of seasickness are usually ignored"). Finally, the watch is relieved. The hypothetical striker picks up his training manual ("Reading is usually difficult and ambitious reading programs planned for a trip usually are never carried out.") His last cigarette tastes even worse than the one before. He lays aside the manual, goes below, and "flakes out."

Interest in work, study for advancement, and reconstructive enjoyment of leisure hours are the results of gratuitous productive endeavor. Individual endeavor beyond the narrow limits of prescription is the life's blood of a dynamic organization. This vital fluid diverted in the earliest phases of seasickness, courses but feebly (if at all) throughout the hours and days of distress at sea.

INDIVIDUAL SUSCEPTIBILITY

Individual variation in susceptibility to seasickness may conveniently be considered in three classes:

- 1 Those who are never subject to seasickness however adverse the conditions encountered aboard escort type vessels in peacetime
- 2 Those subject to seasickness occasionally or often.
- 3 Those who invariably become seasick with the mildest provocation

Seasickness incidence among radar men and strikers in the escort squadrons is 39 percent; among all crew it is 28 percent. In the destroyer squadrons, 39 percent of the radar men and 12 percent of the strikers are affected.

The present data (based on returned questionnaires) indicate that about 40 percent of young men are in class 1 those who are never seasick. There may be no sharp definition between class 1 and class 2. Experienced investigators consider it likely that almost all persons can be made sick if the kind, intensity and duration of motion is adequate.² Overall class 2 includes about 50 percent of the men in the under 26 age group.

Class 3 chronic seasickness is the smallest of the three divisions. Here are found the remaining 10 percent of the population. Class 3 may be considered as having two divisions each of about equal size. One is continuous with class 2. The other comprises those men who most likely will remain seasick to some degree throughout the entire span of their sea duty, no matter how mild the provocation or how adequate the therapy. Two to six men in 100 may fall into this group although the small size of the present sample permits no more than a calculated guess. It is very likely that these men will also have a history of car sickness as a child or of car or airsickness as adults.

In the group as a whole therefore susceptibility to seasickness may be regarded as a spectrum. Incidence of seasickness will vary as the product of provocative stimuli and individual susceptibility. In the formula however susceptibility is not a constant it is to a considerable degree, a function of the present and past experience of each man.

Figure 2 a schematic interpretation of this hypothesis presents those factors considered to influence movement from one class of seasickness to another. These factors fall into two groups (1) those effecting changes in a matter of minutes or hours and (2) those producing results over a period of months or years. Each factor may further be classified according to whether it bears a negative or positive value with respect to aggravation of motion sickness.

ENVIRONMENTAL FACTORS IN MOTION SICKNESS

The *sine qua non* of motion sickness is acceleration. This is not only the chief stimulus in the motion sickness equation but is also a prime factor altering individual susceptibility.

Not all types of acceleration provoke the characteristic response of seasickness. With respect to linear versus angular acceleration it appears that the linear (vertical) movements of a ship are the most distressing.³ According to the type of sea acting upon a vessel the vertical movements vary greatly. For convenience however movement of a given part of a ship may be considered in terms of a simple sine wave recognizing that

this wave is actually a complex resulting from the varying influences of pitch, roll, and scend (heave) The attributes of the wave are period and amplitude The period is largely determined by the ship's hull and loading characteristics It tends to be constant in a given class of military vessel Because the period is fixed, the amplitude (violence) of acceleration is usually determined by the actual pitch and roll of the ship (in degrees), and by the scend (in feet)

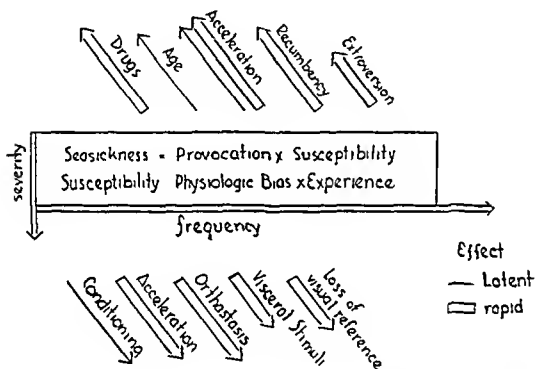


Figure 2. Factors influencing movement of men from one class of seasickness to another

Assuming that linear acceleration is proportional to the distance from the ship's geometric center, the greater keel and beam lengths of the transports might be expected to result in larger values of acceleration in remote parts of the ship, as opposed to those occurring in the destroyer escort. This expectation, however, is negated by the observation that the frequency of the destroyer escort's acceleration wave approaches twice that found in the transports. Accordingly, there is a proportional increase in acceleration amplitude in a given part of the smaller ship.

Although no experimental data are available on this point, it is believed that scend (vertical movement of the entire ship) is an additional factor markedly contributing to seasickness in the escort vessel. Because of its relatively short length (300 feet),

this ship has a tendency to skid down the back of a passing wave enter the trough, and then rise in entirety to the crest of the next wave. On the other hand a 600-foot transport similarly heading into the sea tends to span from crest to crest, there is proportionately less vertical motion of the ship's center of gravity.

Based on the foregoing considerations the thesis is submitted that the linear acceleration in any part of a destroyer escort in mild seas approaches or exceeds that occurring in 20 000 ton transports during rough weather. Accordingly conditions provoking seasickness are likely to obtain with far greater frequency aboard destroyer escort-type vessels than is the case on larger ships.

A paradoxical phenomenon is reported by several of the subjects in the survey as well as by others with extensive service aboard destroyers and escorts. Although these men are frequently ill during heavy swells and moderate seas they report an actual *decrease* in their propensity to seasickness sometimes amounting to complete immunity in extremely rough weather when green water is taken over the bridge and rolls are frequently of 30 degrees or more. An explanation for this incongruous reaction may hinge on the following observation. Standing waves of relatively high frequency (several per second) often occur in the mast and the hull itself under extremely turbulent conditions. These waves are heard and felt as ominous shudders. Though quickly damped that they should occur at all implies the presence of extremely strong, high frequency components in the surrounding medium the sea. Alexander cited by Handford and others suggests that the period of acceleration rather than its violence (amplitude) constitutes the effective motion sickness stimulus. Periods of several seconds or more may be the most provocative. The paradox cited lends support to this thesis. The moderately heavy slow sinusoidal ground swell may be more likely to incapacitate the susceptibles than will a much stronger wave form that is broken up by high frequency components.

In summary then the shape and period of the acceleration wave may be more significant than its actual violence. The increased tendency for seasickness aboard the smaller vessel is probably not as much related to its extreme pitch and roll values *per se* as to its short length and small inertia. The latter permit significant periodic linear acceleration to occur under relatively mild sea conditions.

INDIVIDUAL FACTORS IN MOTION SICKNESS

Having examined certain attributes of the basic stimulus let us turn to other factors which rapidly influence susceptibility to

motion sickness. Of these, change in posture is the most striking. It is traditional to expect some moderation of seasickness upon lying down, and to anticipate a recurrence upon again assuming the upright posture. The premise that this phenomenon is more than coincidental is supported by experimental data and physiologic considerations. Those investigating seasickness in troops report a striking increase in mal de mer immediately after reveille.⁴ Laboratory studies wherein motion sickness is induced by swinging show that orthostatic human pendula are distinctly more susceptible to swing induced sickness than are recumbent persons. Physiologically, it is believed that the macula of the utricle of the inner ear is the prime receptor for linear acceleration stimuli. In the upright posture, the macular otolith rests on the macular cilia. In the recumbent position, the otolith approaches the same horizontal plane as the macula. As a result, in the later posture the otolith is much less strategically situated for effective agitation of the macular cilia in response to vertical acceleration.² Restoration of proprioceptive righting reflexes on arising may also be a factor contributing to motion sickness.³

Many persons susceptible to seasickness report that smoking and the drinking of coffee, particularly in the absence of food, are definite contributory factors. Visceral stimuli, especially the contractions or secretions of an empty stomach, may be considered to have a positive tendency to aggravate seasickness. In this category are included noxious odors and the smell of food. When loading diesel oil aboard the escort vessels under consideration the fume-laden air displaced from the tanks is vented into the living compartments. Fumes similarly escape during daily soundings of the tanks. With respect to food odors, numerous men may be berthed in a compartment that is also the crew's messing area and directly adjacent to the steam table.

Enclosed space rates high on the list of factors believed to contribute to sickness at sea. Although the leading question posed in the survey may have given a spuriously high response, loss of visual contact with static references, such as the horizon, is known to enhance motion sickness. Blindfolded persons in swing tests, for example, show an increased incidence of illness.²

If considered solely in regard to amelioration of seasickness aboard small ships, improved habitability is worthy of productive investigation. Heat and inadequate ventilation go hand in hand with enclosed space on the destroyer escort especially when the ship "buttons up" for rough weather. The situation is aggravated further during general quarters. Men are confined for long periods in small compartments, particularly the radio room com-

bat information center and the code room. In none of these is there visual contact with the horizon. In all of them considerable heat from electrical apparatus is added to that dissipated by the human occupants. Conditions favoring seasickness are at their zenith yet those spaces are precisely those most critical with respect to the effective military operation of the ship.

PSYCHIC FACTORS IN MOTION SICKNESS

In the promotion of seasickness the part played by psychic factors is disputed. One view holds that seasickness is all in the mind. This opinion is invariably volunteered by those who have never been seasick. Although the inevitable sea story may indicate that the narrator has a truly impressive resistance to motion sickness the anecdotal approach contributes little to one's general understanding of the subject.

At the other extreme in the opinion poll is a young man who had been excluded from the society of his mates because of certain offensive personality traits. He had six months of sea duty and had been severely ill much of the time. According to this youth, "My seasickness is caused by my lack of balance when the ship is rolling and pitching. My lack of balance comes from the fact that I have flat feet and bad legs."

Chinn believed that the importance of psychic influence had been overestimated. Nonetheless I have been impressed by a tendency for immature, dependent, highly suggestible men to appear among those affected most dramatically by motion. Under stress such persons exhibit a proclivity for explaining inadequacies of personality in terms of specific somatic defects. It was of interest then to find that, using a questionnaire technique, the Naval Medical Research Institute found no evidence to indicate a correlation between general psychosomatic complaints and susceptibility to seasickness. However the Institute considered such a questionnaire useful in screening out persons who would be severely affected by seasickness.

PROLONGED PSYCHIC CONDITIONING

Although the six ships of Escort Squadron Fourteen are superficially alike each has a definite personality. This personality is the composite of minor structural and functional differences manifest to the observer through visual, olfactory, auditory and vibratory stimuli. Especially pervasive aboard a diesel ship are noise and vibration. One rapidly becomes accustomed to these continuous sensory intrusions but their existence is rendered none the less real. For months on end the ship's inhabitants are steeped in this milieu of sensory stimuli.

It appears reasonable that a person who is subject to seasickness in such an environment may be conditioned rather quickly to associate the environment itself with the discomfort and depression of motion sickness. Seasickness is such a gripping malady, and the external stimuli aboard ship so ubiquitous, that it does not necessarily require an abnormal degree of intrinsic suggestibility for a definite lowering of the threshold of motion sickness to occur. This is especially true when the patient's discomfort is colored with hopeless pessimism engendered by his ignorance of the self-ameliorating characteristics of his distressing malady, and accentuated through the unsympathetic attitude of his colleagues and superiors. This should not be construed as a recommendation that all seasick men be put to bed and tenderly regarded as sensitive plants. A few persons otherwise useful citizens, seem to disintegrate under the initial impact of severe motion sickness. Occasionally it is prudent to indicate to such a man the advantage that lies in directing his attention toward areas external to his own soma as soon as possible. Toward this end, administrative firmness may sometimes have a higher persuasive value than the medical officer's advice and pills.

The operation of psychic conditioning has a marked tendency to move a moderately susceptible person into a class characterized by an increased severity of seasickness. Once there, further conditioning tends to "freeze" him. Despite adequate motivation, the man becomes genuinely resistant to all efforts aimed at dislodging him from the chronically seasick class. An appreciation of the role of conditioning would tend to illuminate the incongruous plight of the man who "heaves whenever they light off the main engines." The influence of conditioning has been neglected though it has clear medical implications. Early finding of cases and vigorous and enlightened therapy with drugs may effect a significant reduction in the ultimate number of chronically seasick seamen.

FACTORS RAPIDLY REDUCING MOTION SICKNESS

The average person adapts to motion with remarkable celerity.^{2,4} Numerous men report that they are seasick only during the first two days at sea. Occasionally the discomfort passes in a matter of hours. An interlude of a week ashore usually destroys such adaptation and the next few days at sea are again uncomfortable. The severity of illness and the presence or absence of vomiting do not appear uniformly related to adaptability. One man may never vomit, yet will remain uncomfortable for a week or more at sea. Another may vomit on the first day and be completely free from symptoms thereafter.

It appears that the labyrinthine receptors filter out, become fatigued or otherwise reject periodic linear acceleration of a

specific frequency upon continued exposure. It has been previously noted that certain men who are commonly seasick develop resistance under unusually turbulent conditions. It may be that periodic acceleration above a critical point of violence is associated with the development of more rapid saturation or resistance of the linear receptors.

The ataxia of the (sober) seafarer on dry land is legendary. In susceptible persons who become more or less adapted to acceleration, a remarkable sensation of intermittent levitation while sitting ashore is reported during the initial days following a prolonged and rough voyage. Perhaps this phenomenon is analogous to the past pointing noted in Bárány chair experiments or to the after image associated with brilliant retinal stimulation.

The pronounced effect of recumbency in reducing motion sickness has been noted and has definite practical applications. First, and when not incompatible with ship's work, intermittent recumbency is a valuable prophylactic against seasickness. Second, it is particularly useful in association with drug therapy. The administration of anti-seasickness drugs before getting under way is desirable but overemphasized. In the person already sick who has neglected drug prophylaxis, lying down for 60 to 90 minutes after medication frequently enables him to absorb the preparation and subsequently return to work with diminishing discomfort. Similarly, a stiff dose of dimenhydrinate (dramamine) also a useful sedative in this condition before retiring may result in a day of well being following a day of misery.

Aboard ship, the commissary and operating departments frequently differ regarding the question of food for men standing night watch. Many men report the value of food as a prophylactic against seasickness. Some report motion sickness only upon arising for mid- or morning watches. In view of the combined influences of visceral stimuli and change in position in such situations, food of some sort (in addition to the time-honored coffee) for men standing night watch deserves consideration.

OTHER FACTORS REDUCING MOTION SICKNESS

Far more significant than age is the benign influence of experience on the reported incidence of chronic seasickness. Men who are seasick in their first months afloat may reasonably look forward to diminishing disability during their first tour of sea duty. In acquiring resistance to acceleration sickness, it is probable that adaptation plays a more effective role than does the process of aging.

Position within the ship is generally thought to influence motion sickness. The evidence that the basis for this belief is

more than apocryphal is not convincing. In one study, China and others¹ showed that a definite decrease in vomiting occurred among men quartered near the center of a troopship. In a similar study by the same investigators, however, no correlation of sickness with berth could be shown.⁶ In explanation of the latter findings, it was aptly noted that the subjects spent relatively little time in their "living" compartments except when recumbent and highly resistant to motion sickness.

Aboard a destroyer escort, change in berthing compartment to inhibit seasickness is of limited practical value. Space is a premium item. The amidship spaces are devoted to heavy machinery. Moreover, in compartments having relatively homogeneous populations, distance from the center of the ship is not shown to be correlated with an alteration in the incidence of seasickness. Finally, in peacetime the assigned berthing compartment is a matter of convenience largely determined by the division in which each man works. Nonetheless, the wisdom of berthing many of the younger, inexperienced deckhands in the forward messhall is questionable. Here they are exposed to food odors, humidity, and excessive invasion of their limited personal privacy. Moving out of the messhall, however, is considered by some a privilege associated with advance in grade. Wholesale alteration of the population of this compartment must be considered in the light of possible adverse effects upon morale.

The marked correlation between chronic seasickness and history of other motion sickness (table 4) raises the question of screening men in regard to suitability for sea duty. Prediction on the basis of history alone, however, would have salient inaccuracies leading to unwarranted wasting of manpower.

III ASPECTS OF THERAPY

Three major recommendations are particularly of medical concern. First, specific education of the squadroa medical officer is necessary if he is to meet the challenge of seasickness intelligently. Although rarely appearing on standard reports, this illness may in a single day, affect up to 50 percent of the men within the medical officer's area of responsibility.

The physician has insignificant bibliographic facilities aboard the smaller ships. The application of information and experience acquired by chance and osmosis comes woefully late in the physician's relatively brief span of sea duty. Between application and results is a further unfortunate period of delay.

Valuable data are available, data painstakingly prepared by military agencies for military use. It is distribution that is deficient. Deserving of consideration is the compiling of a bulle-

tin concerning the management of motion sickness to be specifically adapted for use by medical representatives afloat. The bulletin should be current, and it must be realistic. Toward these ends, information assembled by a central agency might be edited by the force medical officer in consultation with his men afloat.

The program of education must go farther than the unit medical officer to be effective, it must pervade the grass roots—the individual hospitalman. The need for enlightenment in regard to attitude and pharmacology is appallingly great. A hospitalman who summarizes his approach by saying "I have no patience with those (seasick) guys" is of negative assistance to the man genuinely seeking advice.

With respect to pharmacology at a shore dispensary in recent months dimenhydrinate was dispensed with the homeopathic admonition "Take $\frac{1}{2}$ tablet three times a day." Accordingly the second major recommendation is a corollary of the first. Secure rational use of existing drugs and improved control of seasickness will follow. Our data indicate that practices of prophylactic medication current in the Squadron are inadequate in regard to the variety of agents available but not used in the dose of the agent used, in the number of susceptible persons brought under treatment, and in the records maintained on those treated. This sweeping indictment reflects an unfortunate hiatus between that which the right hand of military medicine knows and that which the left hand does.

USE OF DRUGS ABOARD SHIP

As Chinn² has emphasized, the common belief that only a small percentage of persons are susceptible to motion is entirely false. The majority of men in Escort Squadron Fourteen had been seasick at one time or another.

The survey results have been concerned entirely with the reported incidence of seasickness. The questionnaire did not attempt to evaluate the severity of illness. It is of interest however that 30 percent of the men occasionally seasick were sufficiently ill to try dimenhydrinate at least once. Of these some allegedly had taken as many as 10 tablets per day. Of the men who considered themselves often seasick 60 percent had also been moved to try this drug. Moreover among those often ill were men known to be prostrated by seasickness in the northern operating areas.

Until January 1954 dimenhydrinate was the only agent dispensed in the Squadron for the control of seasickness. For the Squadron as a whole 83 percent of the men subject to chronic seasickness stated that they had received this drug at one time or another. Sixty percent of those who were often seasick had

also used it. The median dose of dimenhydrinate was four tablets (200 mg.) per day.

Aboard the U S S *Able*, interest in the prevention of seasickness was high. Through the co-operation of the hospitalman, and sparked by the genial enthusiasm of individual line officers, an active program of dimenhydrinate therapy existed. Aboard this ship, the median dose was eight tablets per day (400 mg.). All personnel subject to chronic seasickness received dimenhydrinate. Of the six additional men who were "often" sick, all but one received treatment.

Aboard the U S S *Baker*, in contrast, dimenhydrinate enjoyed a general reputation for being ineffective and undesirable or so the ship's hospitalman alleged. It is of interest that one third of the personnel subject to chronic seasickness had not had dimenhydrinate. Of the men who were "often" ill, two thirds were similarly untreated.

There is definite evidence that antiseasickness preparations produce adverse effects on psychomotor test scores, the decrements in test scores tend to agree with the protective capacity of the drug.⁷ Drowsiness and other side effects are frequently noted (In fact, "drowsiness" is rather a euphemism "narcolepsy" is for some persons, more apt.) However, no quantitative data have been received concerning the adverse effects of seasickness *per se*. These effects are doubtless severe. It is this observer's view that the side effects of carefully administered therapy are by far the lesser evil.

Controlled studies demonstrate that available preparations protect 50 percent to 70 percent of those susceptible to vomiting due to seasickness. These levels of protection are obtained with routine distribution of the drug. With individualized dosing the record should be even better and the balance between side effects and control more satisfactory. Persons vary in their response to therapy and susceptibility to motion. There is at present no "magic bullet" for seasickness. In a patient responding inadequately to standard therapy, it is necessary that the dosage be patiently titrated against his susceptibility, response and the provocative stimuli. Inadequate and excessive doses equally evoke the patient's discouragement and mistrust.

Various agents may be needed in the difficult cases.^{1,2,3} Besides dimenhydrinate,⁴ other valuable preparations are diphenhydramine hydrochloride (benndryl),^{5,6,7,8,9} dextro-amphetamine sulfate (dexedrine),¹⁰ desoxyephedrine hydrochloride (desoxyn),¹¹ scopolamine,^{12,13,14} and meclizine hydrochloride (bonamine).¹⁵ Screening studies have shown that diphenhydramine is just as effective as dimenhydrinate in certain persons resistant to the

charged eight days after admission with a weight of seven pounds six and one half ounces. When seen at 12 weeks of age she weighed 13 pounds and was doing well.



Fig. 1 (case 1) Roentgenogram showing extent of gastric distention. Fig. 2 (case 1) Roentgenogram showing distention of the stomach through the small intestine after passage of the pylorus. The location of the partial obstruction is pointed out by the arrow.

Case 2. A three week-old male infant was admitted to the hospital because of listlessness and loss of appetite, swelling and redness of umbilicus, loose stools and abdominal distention. The abdomen was severely distended and the umbilicus was obviously infected and surrounded by induration. The initial impression was that of an acute omphalitis and peritonitis with secondary paralytic ileus.

Conservative medical management consisting of nasogastric intubation with continuous suction was immediately started. Vigorous antibiotic therapy and the administration of fluids were instituted.

The first 24 hours saw a most dramatic change in the child's clinical condition on the above regimen. The abdomen became soft and flat. The redness about the umbilicus decreased and the state of hydration was much improved, but loose stools of pea green color continued to be passed. After 48 hours of medical management a palpable liver and spleen were felt, but the umbilicus was no longer red. The child made a rapid and uneventful recovery.

Case 3 A three week old female infant was admitted to the hospital because of fretfulness poor appetite abdominal distention and fever. The abdomen was severely rotund and tympanitic. There was an um-



Figure 4 (case 3) Roentgenogram showing multiple fluid levels in the small intestine. The increased distance between adjacent loops of bowel suggests edema of the bowel wall or intraperitoneal fluid.

bilical infection surrounded by a purple red skin discoloration radiating upward and outward. No organs or masses were palpable and bowel sounds were not heard.

A roentgenogram revealed multiple fluid levels in the small intestine. In addition the distance between adjacent air-containing loops of

bowel appeared to be increased suggesting either edema of the bowel wall or more probably the presence of intraperitoneal fluid. The peritoneal fat pad on the right was completely obliterated (fig. 4).

The initial clinical impression was acute omphalitis with acute peritonitis.

A conservative course of medical management initiated immediately included decompression of the stomach, large doses of antibiotics and supportive therapy with fluids. The infant responded well and within 48 hours was taking and retaining fluids given orally. Six days after admission she was discharged fully recovered.

DISCUSSION

Infections of the umbilicus and their sequelae are directly related to the normal anatomic and physiologic changes occurring in the umbilical structures of the newborn. At birth fetal circulation ceases and the umbilical structures begin to obliterate. Anatomically the two umbilical arteries are continuous with the hypogastric arteries which arise from the internal iliac arteries in the pelvis, course along the posterior aspect of the abdominal wall on each side of the urinary bladder and meet as paired vessels at the umbilicus. The large umbilical vein enters the abdominal cavity through the umbilicus and courses upward in the free margin of the falciform ligament into the liver where it divides into two main branches. The larger of the two empties into the portal vein and the smaller continues upward as the ductus venosus to enter into the inferior vena cava. The fact that these vessels are separated from the abdominal cavity by only a single layer of peritoneum and a thin irregular layer of areolar tissue makes the anatomic vulnerability of the abdomen to invading umbilical infections at once apparent. Thus a mild umbilical infection only needs to extend a relatively short distance to produce a serious peritonitis.

The time consumed in the obliteration of these umbilical structures is of extreme importance in the spread of infection. The usual stated time for obliteration of these structures is five days, yet recent autopsy studies have shown that a vessel lumen may contain only a partially organized clot from 20 to 50 days. Therefore final transformation of these umbilical vessels into complete fibrous cords will require a considerable amount of time. Consequently the direct spread of organisms into the peritoneal cavity or the blood stream via these slowly atrophying fetal structures is possible until about the age of six weeks of life.

Sepsis from the umbilicus may be due to several pathogenic organisms. Judson has shown that saprophytic infection of the umbilicus causes a delay in healing and gives rise to an in-

creased liability to invasion by pathogenic organisms. Bacteriologically, *Str. pyogenes* is the most frequently recovered organism from both the umbilicus wound and the blood stream. *Micrococcus pyogenes* var. *aureus*, *Micrococcus pyogenes* var. *albus*, *E. coli*, and *Diplococcus pneumoniae* are occasional invaders and are more likely to be found in combination than as single infective agents.

Probably the most frequent mode of entry for organisms in primary peritonitis is the blood stream. In 1939, Ladd and others⁵ reported a series of 67 cases of primary peritonitis and stated that over 50 percent of these illnesses were preceded by an upper respiratory infection. Of these 67 cases, however, only 11 were reported to be under one year of age, and we could not ascertain whether any of these were in the neonatal period. It is significant that the umbilicus was not incriminated as a portal of entry in any of their cases. In the literature,⁶⁻⁸ the gastrointestinal tract, the transdiaphragmatic lymphatic, and the vaginal tract and fallopian tubes have all been listed as portals of entry in primary peritonitis. In the three patients presented herein, primary peritonitis followed a definite umbilical infection.

There exists in the neonatal infant three factors that predispose to the development of a generalized peritonitis: (1) The lack of an adequate omentum which has not yet developed to a point where it can combat infection by the usual "walling off" process, (2) the lack of any acquired immunity to combat the invasion of even a minor infection, and (3) the bacteriologic phenomenon whereby the peritoneum can withstand to some degree the onslaught of a single infective agent but will tolerate only poorly the multiple infective agents. Because of these factors, peritonitis in the newborn period must be diagnosed and treated early if the mortality rate is to be reduced.

The failure to find free air under the diaphragm by radiologic examination was one of the strong points that led us to regard the two latter cases as primary peritonitis. There can be no hard and fast rules whereby a primary peritonitis can be differentiated from a secondary type.

The classical clinical picture is described by Ladd and Gross.⁹ Infants exhibit crying, irritability, and restlessness. The temperature is elevated. Diarrhea is found in 50 percent of the patients, and vomiting is frequent. (In two of our three cases the diarrheal stools and the material obtained by nasogastric aspiration were thin, watery, and pea green in color.) If either vomiting or diarrhea is severe or protracted, dehydration will ensue. Excessive perspiration is said to be common, although not noted in any of our patients.

On physical examination these infants appear to be severely ill. The pulse is found to be rapid. The abdomen has a soft "doughy" feel and some degree of distention is the rule. Rarely shifting dullness may be found. Peristaltic activity may be increased early but will be diminished to absent later. The total white blood cell count is always elevated. The greatest confusion lies in deciding whether or not the diagnosis should be a secondary peritonitis due to rupture of a hollow viscus. Appendicitis which is one of the most common causes of secondary peritonitis is rare in the neonatal period. Roentgenographic examination of the abdomen must be relied upon to rule out mechanical obstruction of the gastrointestinal tract. The chest signs on physical examination and a roentgenogram of the chest should rule out pneumonia.

Ideally if these illnesses can be diagnosed with any degree of surety as primary peritonitis and if the additional hazard of surgical exploration can be avoided the best hope lies in good medical management. As has been pointed out the most likely bacteria is one of the streptococcal or pneumococcal groups. Because specific bacteriologic diagnosis is often delayed one must begin antibiotic and chemotherapeutic treatment of the patient before the organism or its sensitivity is known.

An adequate regimen for management of these cases in the newborn period should be as follows:

1. Whole blood (20 cc per kilogram of body weight) should be given by transfusion.

2. An addition of 130 cc per kilogram of body weight of fluids should be administered during a 24 hour period. No more than 30 cc per kilogram of fluids should be in the form of an electrolyte solution; the remaining 100 cc per kilogram should be nonelectrolyte solution.

3. Nothing should be given by mouth and continuous nasogastric suction should be maintained.

4. Antibiotic and chemotherapeutic agents should be given as follows: (a) Six milligrams (10 000 units) per kilogram of aqueous penicillin a day should be given intramuscularly in divided doses every three hours. An addition of 600 mg (1 000 000 units) should be given intravenously. (b) Per day 0.2 gram per kilogram of sulfadiazine should be given in divided doses every four hours. This may be given intramuscularly by using a five-percent sulfadiazine sodium solution in which each cc contains 45 mg. (c) Per day 5 mg per kilogram of oxytetracycline (tetracycline) should be given in divided doses every six hours.

5. Oxygen and warmth should be administered in an Isolette unit.

6 The patient should be observed constantly and re evaluated at short intervals

If the report of a bacteriologic culture should reveal an organism that will not respond to the above regimen, re evaluation and specific therapy should obviously be instituted

SUMMARY

Although primary peritonitis was once a common infection and sequela in the preantibiotic and preaseptic eras, it is now seldom reported. Three cases of primary peritonitis reported here occurred following umbilical infections. In these cases the mode of entry of the causative organisms was by direct transmission through the umbilicus. Because the most common mode of peritoneal infection is now currently reported to be by hematogenous spread, these cases show that direct spread from an infected umbilical wound is still a real danger.

The regimen for management includes blood transfusion, the administration of fluids, nasogastric suction, and antibiotic and oxygen therapy.

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PEPTIC ULCER IN MILITARY PERSONNEL

Management in the Outpatient Clinic

SAMUEL P WISE III *Major MC USA (R 1)*

JOHN P OOENGENS *Captain MC USA*

JOSEPH I HUNGATE J *Captain MSC USA*

DAVID P VIELHABER *First Lieutenant MSC USA*

PEPTIC ulcer is one of the chief medical causes for prolonged hospitalization in the military service and a frequent reason for separation from the service. These facts have received considerable study by Palmer and his associates.¹⁻³ This article describes a program of outpatient management of patients with peptic ulcers in a large basic training post and presents observations and statistical analyses of the results. This program was first instituted because of the many problems encountered in the management of patients with ulcers in the military service. These include reduction of the effective strength of the command, the necessity for separation of some soldiers from service, and the need for disciplinary action in many cases. It was believed that it would be more economical to maintain these patients on duty status whenever possible. This would eliminate hospitalization as a secondary gain because this is often a detriment to patients' adjustment.

METHODS

From 1 April 1953 through 31 March 1954 personnel of the medical and social work clinics worked closely together in the diagnosis, treatment, and follow-up care of 102 patients with roentgenologic evidences of peptic ulcer. This group was comprised of enlisted men of all ranks and with service of varying length.

All patients with gastrointestinal symptoms were first examined in their area dispensaries and the indicated diagnostic studies including an upper gastrointestinal series were carried out. When a patient with a peptic ulcer was found he was referred to the outpatient clinic where, if indicated, further diagnostic procedures were requested. In the absence of complications such as bleeding, penetration, or obstruction the patients were placed on the following regimen:

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1 Aluminum hydroxide with magnesium trisilicate, taken 30 minutes after each meal and at bedtime

2 Methantheline bromide (banthine bromide), 50 mg, taken 30 minutes before each meal and 100 mg at bedtime

3 One half pint of milk taken five times a day in addition to the regular ration

4 Patients were given dietary instructions and were encouraged to carefully select their food and to avoid highly seasoned and greasy foods

5 A permanent P-3 was placed on the patient's physical profile record with a recommendation that his assignment be to an installation where regular hot meals and supplemental milk rations were available, that he be permitted to select food from the regular serving line and that prolonged physical exertion and heavy exercise not be required. It was recommended that basic trainees be required to complete only an eight week training cycle followed by an assignment to a service school or similar type job.

When it had been ascertained by the medical officer that the patient could be safely treated on an outpatient status he was referred to the medical social work officer who attempted to help the patient with any environmental or emotional problem which might be interfering with the medical treatment or aggravating his ulcer symptoms. Helping the patient adjust to service life and associated emotional difficulties was considered a part of the total medical treatment. Patients with ulcers present many problems which may be ameliorated by the social worker.

A mimeographed "milk certificate" was prepared for use at this installation to authorize unit commanders to requisition supplemental milk for such patients. These milk certificates, together with report of physical profile, were hand carried to the patient's unit by an enlisted social work technician.

After completing the initial medical and social work evaluation, the patient was returned to duty with an appointment to see the social worker in one week. The patient was continued in a case work status for help with his personal problems or directed to report back to the clinic from four to six weeks for re-evaluation of his military adjustment. Patients were seen by the physician only when medical complaints were present and by the social work officer when it was evident that his personal adjustment was the primary difficulty. Patients were instructed that they could return to the clinic any time during regular hours for renewal of prescriptions or for discussion of medical or personal difficulties. Patients who required hospitalization during initial

examination were placed on this program after minimum hospitalization

When the patients were returned to duty, unit commanders were requested to complete a questionnaire concerning the patient's efficiency, adjustment, and value to the Army. The average length of time from the first evaluation of the patients until the completion of the questionnaire was 7.32 months. The questionnaire was a checklist for the patient's immediate superior officer to rate his efficiency using standard efficiency report phraseology. In addition, a group of questions were listed which would reflect the soldier's adjustment in his unit. The basis of our evaluation of this program is thus dependent upon the patient's superior officer's rating of his duty capabilities and adjustment within the unit.

RESULTS

This group of 102 patients consisted of 37 enlistees and 65 inductees both serving as cadre and trainees. The proportion of enlistee inductee and cadre trainee for those with ulcers was the same as the overall ratio at this training post. Table 1 presents graphically the length of service up to the time the patient was first interviewed in this study. About 55 percent of the patients had less than four months of service. Of the 21 men with more than 12 months of service, eight had from five to 10 years of service and two had served over 10 years.

The status of the 102 patients at the time questionnaires were obtained is given in table 2. The average length of time the men were in the units in which their efficiency was evaluated was seven months. High replacement rates of personnel are characteristic of training posts and no attempt was made to decrease the mobility of the study group because of the diagnosis of peptic ulcer. When the questionnaires were completed, only 20.6 percent of the patients remained at this post. The only consideration given in duty assignment was that normally accompanying a P 3 profile. The data in table 2 has been grouped into four sections to facilitate statistical computations and comparisons. In computing efficiency ratings, only group I (returned to duty status by medical officer) and group II (discharged from the military service) were considered.

Of the 102 patients in the study, 83 were in group I and eight were in group II at the time the questionnaire was completed. The 11 patients in group III were not considered because two were hospitalized for other reasons (one with pulmonary tuberculosis and one with arthritis), one patient had been killed in an accident, and on eight follow-up data were not sufficient regarding their efficiency and adjustment to include them further.

TABLE 1 *Distribution of patients with ulcers in enlistee inductee categories according to number of months in service who first interviewed*

Length of service	Total		Enlistee			Inductee		
	Number	Percent	Total	Cadre	Trainee	Total	Cadre	Trainee
Less than 2 months	32	31.4	6		6	26		26
2 months but less than 4 months	24	23.5	4		4	20		20
4 months but less than 6 months	16	15.7	4		4	12	3	9
6 months but less than 12 months	9	8.8	4		4	5	1	4
More than 12 months	21	20.6	19	19		2	2	
Total	102	100.0	37	23	14	65	6	59

The efficiency ratings shown in table 3 are based upon the completed questionnaires of 91 patients in groups I and II. Those medically discharged or administratively separated for unsuitability under the provisions of AR 615-369 were automatically considered to be unsatisfactory. Of these 91 patients 81.3 per cent were rated satisfactory while 18.7 percent were unsatisfactory. Of the 17 patients rated unsatisfactory two were in the stockade, two were listed as deserters, one was absent without leave, eight had been discharged from the service, and only four men were performing their duties but were rated as unsatisfactory by their commanding officers.

TABLE 2. Status of 102 patients in questionnaire completed

Status	Number	Percent
Group I Returned to duty by medical officer		
Permanently	72	70.6
Eventually	6	5.8
Intended	2	2.0
Absent without leave	1	1.0
Discharged	2	2.0
Total	83	81.4
Group II Discharged from military service		
Medically discharged	6	5.8
AR 615-369 discharged	2	2.0
Total	8	7.8
Group III Others		
Discharged (retired)	1	1.0
Permanently hospitalized	2	2.0
Inadequate follow-up	8	7.8
Total	11	10.8

Ratings were obtained on 33 enlistees and 58 inductees. The major significant difference in efficiency was in the two trainee groups. Only 50 percent of the 12 enlisted trainees whereas 80.6 percent of the 50 inducted trainees were rated as satisfactory. This disagrees with previous studies which have inferred that inductees with ulcers were poor risks for return to duty because of the high rate of rehospitalization.

TABLE 3 *Efficiency rating of enlistees and inductees*

Efficiency rating	Total		Enlistee			Inductee		
	Number	Percent	Total	Cadre	Trainee	Total	Cadre	Trainee
Satisfactory	74	81.3	26	20	6	48	6	42
Unsatisfactory	17	18.7	7	1	6	10	0	10
Total	91	100.0	33	21	12	58	6	52

In attempting to obtain a better idea of how these patients rated in adjustment after return to their units for checking by the unit commander the following statements were included in the questionnaire (1) Unit had no knowledge of revised profile (2) Needs no special consideration (3) Wants special consideration but works well (4) Complains constantly (5) Extra milk rations and diet are too difficult to arrange (6) Loses too much time from duty because of ulcer symptoms (7) More trouble than he is worth to the unit. The majority of the questionnaires returned had only one of these statements checked. Of the 74 men rated as satisfactory on efficiency 40.5 percent were not known by their unit to have had a revised profile. We assume that in these cases the man with an ulcer did not complain of symptoms and so his revised physical profile was not brought to the attention of the rating officer. Fifty-five questionnaires indicated that no special consideration was needed. "Works well but wants special consideration because of medical condition" was reported six times. "Complains constantly" was checked on only one questionnaire and that was on a soldier who was categorized as unsatisfactory. It seems significant that "extra milk rations and diet too difficult to arrange" was checked only twice. "Loses too much time from duty because of ulcer symptoms" was reported five times. On three completed questionnaires it was indicated that the man was "more trouble than he is worth to the unit."

The final efficiency rating of the soldiers with peptic ulcer in this study was not influenced by hospitalization when compared to the rating of those not hospitalized (table 4). A total of 1,105 hospital days were used during the year covered by the study; this represents an average of 10.83 days per man in the study or an average of 25.70 days for each of the 30 men we hospitalized. In Palmer's series the average period of hospitalization in over 50 percent of his patients was between four and seven months and the group as a whole spent 10 percent of their service time in the hospital. A portion of the difference in length of hospitalization is probably related to the fact that Palmer's series concerned patients in a general hospital who had more severe symptoms and complications.

The noneffective rate for patients with ulcers at this installation from 1 April 1953 through 31 March 1954 was 0.10² per thousand. The average total noneffective rate at this installation for all injuries and diseases during the same period was 16.52. These figures were computed by using the standard Army formula for noneffective rates. By comparison previously reported noneffective rates for patients with ulcers were 0.42 per 1,000 troops on the average day for the period 1942-1944 and 0.3² per 1,000 troops on the average day for the period 1937-1940.¹

TABLE 4 *Efficiency rating of hospitalized and nonhospitalized groups*

Group	Efficiency rating		
	Satisfactory	Unsatisfactory	Total
Hospitalized	30	8	38
Nonhospitalized	44	9	53
Total	74	17	91

Chi square (χ^2) was determined for the significance of the difference between the two groups. The expected frequencies were calculated from the contingency tables. The observed frequencies were compared with the expected frequencies by the chi-square test. The probability of observing such values between 50 and 70 is less than 0.05, therefore the difference is significant.

Table 5 illustrates the average number of times the subjects were seen in the medical, social work, and mental hygiene clinics. These visits were in addition to any hospitalization. For purposes of comparison those with satisfactory and unsatisfactory ratings averaged the same number of visits to the clinics.

TABLE 5 *Average number of visits made to the clinics*

Efficiency rating	Clinic			Total
	Social Work	Mental Hygiene	Medical Service	
Satisfactory	4.50	4	1.9	6.8
Unsatisfactory	3.6	6	1.8	5.9

T test of the significance of the differences between the mean of the satisfactory and unsatisfactory groups for the three types of clinics yielded a t value of 1.0. The probability of observing such values between 25 and 50 is therefore accepted as not significant.

The results obtained by medical treatment of these patients was uniformly satisfactory. About 20 percent of the patients remained at this post. From observation of those patients retained at this station and from the report of the questionnaires, their response to treatment was believed to be good. As has been previously mentioned, some of these patients were hospitalized initially for study but none were rehospitalized after the outpatient treatment program was started. No complications were encountered in any of the patients following the institution of outpatient management. The absence of bleeding, intractable pain, episodes of obstruction, or other complications was striking.

ing After an initial period of close observation and intensive treatment, many of the patients were symptom free as a result of diet management alone From the number of outpatient visits it was obvious that these men did not ride the sick book There were instances of recurrence of pain but reinstitution of the medication was successful in relieving these symptoms The primary factor in those few patients who continued to have complaints was emotional instability rather than recurrence of ulcer symptoms

DISCUSSION

Prior to the initiation of this program in April 1953 there was an average daily census of 25 patients with peptic ulcers hospitalized in this installation The average daily number of patients hospitalized during the previous year had ranged from 20 to 35 all were housed in a single ward and were restricted to that ward Many disciplinary problems arose in this group Patients with severe persistent symptoms were discharged from the service for medical reasons This undoubtedly had an adverse effect on the motivation of the other patients on the ward The secondary gains of hospitalization were such as to militate against the patients recovery and a behavior pattern had been established in those who were returned to duty which undoubtedly resulted in loss of efficiency

It is now the policy to treat these patients on an outpatient basis unless some complication should arise which warrants inpatient treatment In many instances these patients were hospitalized initially and when the diagnosis was established, treatment was instituted in the hospital but the patients were returned to duty as soon as possible and treatment was continued in the outpatient clinic Usually no more than three or four patients with ulcers were in the hospital at any one time Because they understood they would be returned to duty they were motivated to return as soon as possible No serious disciplinary problems were encountered and the doctor patient relationship was much more satisfactory

Many physician man hours were saved by reducing the period of hospitalization and by the use of the assistance of the medical social work officer Stress encountered in adjusting to the military service was often the precipitating factor in the production of symptoms Frequently the patient closely identified himself with the social case worker thus making it possible for the worker to help him with his social and military adjustments Environmental manipulation was a positive factor in aiding the patients adjustment When the social worker noted that the patient was not progressing satisfactorily he was referred

again to the physician. This approach saved the physician time and still gave the patient a complete and thorough follow up.

Our conclusions are based on present and previous observations. In tabulating the results comparison was made with the status of patients with ulcers who were previously treated at military installations. We believe from this comparison that the patients in our study made a better adjustment to military service than could ordinarily have been expected. The majority functioned efficiently in their units and were rated as acceptable by their unit commanders. On the whole, they presented no greater problems than the average soldier. If patients with peptic ulcer are to be inducted into the service and retained on military duty, their initial management is of utmost importance to their future adaptation. If, early in the course of their military training, they are exposed to a situation which will encourage them to believe that by exaggerating their complaints they will be discharged from the service or receive other benefits, their adaptation will probably be poor. It logically follows that hospitalization should not be a part of the routine management in such patients and that separate wards should not be used to treat them. From our study we concluded that outpatient treatment utilizing social case workers is entirely feasible and better prepares these men for a satisfactory adjustment to military life.

The approach to the problem of peptic ulcers might perhaps be different in peacetime than in time of a national emergency. If patients do not respond to a treatment program such as we outlined we believe that they will in all probability present a continuing problem and if a trial of duty with treatment fails perhaps such persons should be medically discharged. Those patients with ulcers and psychiatric or personality defects who do not respond satisfactorily to any type of management should be given an early administrative separation. This study did not include an analysis of the relationship of the duration of their illness to their response to treatment. It is our belief, however, that those patients with long standing ulcers with recurrent symptoms or complications should be evaluated promptly and separated from the service if their response to treatment is questionable. This is particularly true in peacetime when the manpower situation is less critical. This in no way invalidates the results which we have encountered and if patients with ulcers are to be retained on active duty, outpatient management is to be encouraged.

SUMMARY

An outpatient treatment program of 102 enlisted men with peptic ulcer was established at this post. Hospitalization was not

a part of the treatment and was used only when medical complications arose. From data obtained from questionnaires completed by the patients' commanders we have concluded that the majority of these men were able to perform their duties efficiently and that they made a satisfactory adjustment in the military service. Outpatient treatment for such patients is entirely feasible and results in a saving of physician man hours spent in the treatment of this disease. The noneffective rate in this group was less than that reported in previous studies. The outpatient treatment of patients with peptic ulcer is the preferable approach to this problem in the military service.

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DR EDWARD H CUSHING NAMED DEPUTY TO DR BERRY

Dr Edward H. Cushing of Washington, D. C., on 3 March 1955 became the first Deputy Assistant Secretary of Defense (Health and Medical) when he took the oath of office in a Pentagon ceremony witnessed by Dr. Frank B. Berry and other high government officials.

A native of Cleveland, Dr. Cushing was graduated from Harvard Medical School in 1923. He served as a lieutenant of field artillery in World War I and during World War II was an officer in the Medical Corps, U. S. Navy Reserve. From 1946-1952 he was assistant chief medical officer of the Veterans Administration for research and education. He is a specialist in cardiology, certified by the American Board of Internal Medicine.

The newly created position as deputy to Dr. Berry was established in accordance with one of the recommendations of the Hoover Commission on Organization of the Executive Branch of the Government.

CLINICAL ASPECTS OF RETROLENTAL FIBROPLASIA

GEORGE L TABOR Jr *Commander (MC) USN*

JOHN F SHAUL *Commander (MC) USN*

ORVILLE M GRAVES Jr *Lieutenant (MC) USN*

ALL PREMATURE infants born at this hospital between August 1951 and June 1953 were studied by members of the departments of ophthalmology and pediatrics for evidence of retrolental fibroplasia. Although this brief report of their observations offers no original contributions, the statistics presented from a large general hospital may prove beneficial in analysis of this increasingly perplexing problem.

Detailed ophthalmoscopic examination of all infants over two weeks old having a birth weight under five pounds were made weekly. Homatropine hydrobromide solution (four percent) was instilled in each eye every 10 minutes for four doses to obtain mydriasis. A sterile rubber nipple pacifier facilitated adequate ophthalmoscopic examination with minimal restraining. Each child was examined once a week for three months and thereafter as indicated.

The following features of the premature fundus were frequently encountered and are considered to be normal: (1) Presence of remnants of the hyaloid canal vessel system, (2) pale optic nerve head and retina, (3) retinal vessels more tortuous and dilated than in the adult fundus, (4) the consistently gray peripheral zone of the retina (not to be confused with early retinal separation), and (5) absence of foveal light reflex.

In addition to the above findings, remains of the pupillary membrane were often present, and occasionally transitory retinal hemorrhages were noted, presumably due to birth trauma. Although minus lenses were often needed to see the fundus well, this was in no way found to be correlated with retrolental fibroplasia.

For this series retrolental fibroplasia was divided into the following stages:

Stage 1 Increased tortuosity and dilatation of the retinal vessels and early neovascularity of the retina.

F U S Naval Hospital San Diego Calif Dr Tabor now at 1029 Bank f
Ave C Bldg San Diego Calif

Stago 2 Peripheral retinal edema more advanced neovascularity retinal and preretinal hemorrhages and haziness of the vitreous

Stage 3 Early retinal separation

Stago 4 Massive to complete retinal separation and retrolental fibrous membrane

During this 21 month study there were 6 636 live births at this hospital of which 349 (5.3 percent) weighed less than five pounds at birth. A total of 16 cases of retrolental fibroplasia (4.5 percent) were discovered in this group of premature infants.

Forty three percent of the infants weighing less than four pounds developed retrolental fibroplasia. Only two infants weighing more than 3 pounds 12 ounces developed retrolental fibroplasia, the largest weighing 4 pounds 8 ounces. During the period of this survey an additional group of 21 cases of retrolental fibroplasia falling outside the scope of this report were studied. These included referrals from other hospitals and those born before the start of this report.

Of those infants afflicted with retrolental fibroplasia (RLF) the disease process was arrested in three cases in stage 1, two in stage 2, four in stage 3, in seven the disorder developed to stage 4 and those infants were considered totally blind.

The over all incidence of RLF has never been accurately determined. Some hospitals have reported a complete absence of the disease while others have indicated an incidence rate as high as 75 percent in premature infants. The rate has varied from time to time in the same hospital and has shown marked variation in different hospitals in the same community. Certain areas of the country have reported the prevalence of this condition but in other sections this has not occurred. The prevalence of the condition however has been shown to be directly related to the degree of prematurity of the newborn infant.

By way of comparison with another naval hospital it is of interest that during a period of three and a half years (1947-1950) no patients with RLF were discovered at the U. S. Naval Hospital Philadelphia, Pa. by two of us (G. L. T. and J. F. S.). Whereas no systematic study was made during this period all suspected premature infants were carefully examined ophthalmoscopically and there was excellent follow up in the pediatric department during the first six months of postnatal life. One case of bilateral leukocoria was discovered in a full term infant. One eye was removed because of the possible presence of retinoblastoma. On pathologic examination however a diagnosis of retinal dysplasia was made.

Most of the fundi of the prematures in this series were normal at the first examination at age two weeks. The earliest pathologic changes were observed during the third to sixth week, after which the disease progressed rather rapidly. Little change was seen after the third month of life.

Medical and surgical complications were infrequent. One patient developed secondary glaucoma at the age of six months which was relieved by a posterior sclerotomy, and, to our surprise, has since remained symptom free.

In the last six months of the survey the incidence decreased—only two new cases were found (one arrested at stage 1, the other arrested at stage 3). In no case under our observation did actual regression take place once advanced neovascularization or retinal separation occurred.

Nursery surroundings and conditions were no different from the average premature nursery in a large civilian hospital. Small premature infants (below three and one half pounds) were fed on an Olac formula, larger prematures on an evaporated milk formula (one part of evaporated milk to two parts water, with four tablespoonfuls of Dextro-maltose No. 1 to each 24 ounces of formula). All infants under four pounds were kept in incubators with the minimum amount of oxygen supplement necessary to prevent respiratory embarrassment. Infants weighing under three and one half pounds were generally placed in Isolotte incubators where high humidity could be maintained. Vitamins were administered in the form of Tri-Visol, 0.3 cc, starting at seven days, then gradually increasing to 0.6 cc. This ensured an intake of 5,000 units of vitamin A, 1,000 units of vitamin D, and 50 mg of vitamin C. Liver extract was not given intramuscularly. Aqueous penicillin was administered in cases of suspected atelectasis and when there was a history of fetal membranes being ruptured prior to delivery. Small blood transfusions were given in two premature infants in our series because of severe anemia.

During the time of this clinical study and since the original draft of the manuscript the attention of ophthalmologists and pediatricians all over the world has been brought to focus on the role of oxygen in the etiology of retrolental fibroplasia. Many astute observers have made outstanding contributions in this field, but only a few observations will be highlighted in this brief discussion.

The medical profession is heavily indebted to Drs. Owens and Owens² for their pioneer work in which they proved that RLF was an acquired retinopathy and not a hereditary or congenital condition. Their monumental study opened the doors and laid the foundation for subsequent studies which have led to the

more enlightened and advanced state of our current knowledge of this distressing catastrophe in the prematurely born

Kinsey and Zacharias¹ pointed out in 1949 that there may be a correlation between oxygen therapy and the incidence of RLF

Campbell suggested the possibility that RLF might be due to oxygen toxicity related to use of high concentrations of oxygen. She reported that of those premature infants receiving high concentrations of oxygen 18.7 percent developed RLF whereas the incidence was only 7 percent in those receiving moderate oxygen therapy.

A year later Crosse and Evans² expressed the opinion that the changes in the retina in this disease are derived from a preliminary adjustment of the retina to a high oxygen tension where by the retina loses its ability to accommodate itself to a relative anoxia on removal to atmospheric oxygen having acquired an inertia of response. They believe that the recent onset of the disease is definitely related to the advent and free use of oxygen tents and incubators.

Detailed clinical observations of the premature fundus under the influence of various concentrations and methods of administration of oxygen were first reported by Szewczyk.³ He concluded that RLF is a terminal stage of anoxic retinopathy due to insufficient oxygen supplement to the infant to the sudden removal of the premature from high to low oxygen concentration or to the constant change from high to low concentrations of oxygen.

Recent reports⁴ have furnished evidence which is nearly conclusive that RLF is due to an abnormal response of the retina of the premature infant to a relative state of hypoxia. The highest incidence rate occurs in the premature infants of low birth weight (under 1,500 grams) who have been subjected to high concentrations of oxygen (60-80 percent) in incubators and then removed suddenly to normal atmospheric oxygen (21 percent).

Recent experiments in newborn animals⁵ have produced a retinopathy pathologically similar to that found in retrolental fibroplasia. The pathologic picture of RLF is essentially that of neovascularization due to proliferation of the retinal capillaries. Invasion of the vitreous ensues with subsequent cicatrization, contracture and retinal detachment terminating in a complete retrolental membrane and total blindness.

It must not be concluded that relative hypoxia is the sole cause of retinopathy of prematurity. Investigators are of the unanimous opinion that there must be continuing studies to de-

termine the influence of other factors. We are in complete agreement with Ingalls and Purshottam⁹ that factors such as electrolyte balance and respiratory enzymes in the newborn infant, temperature, and humidity need further investigation.

Nearly all observers and investigators in this field believe that (1) premature infants should be given only that amount of supplementary oxygen necessary to prevent cyanosis and respiratory distress, preferably under 40 percent, (2) the infant should be given supplemental oxygen for the minimal period of time, and (3) withdrawal of the premature infant from an environment of high concentrations of oxygen to one of normal atmospheric oxygen should be a gradual process. It has been suggested¹⁵ "that premature units be provided *only* with tanks containing 40 percent oxygen and 60 percent nitrogen so that the danger of excessive oxygen concentrations can be completely prevented."

SUMMARY

Premature infants should be observed during the first three months for the development of retrolental fibroplasia, making due allowance for those features normally seen in a premature fundus. The earliest pathologic changes were observed during the third to sixth week in this series.

The incidence of retrolental fibroplasia appears to be a direct function of prematurity. Sixteen cases were discovered among 349 infants weighing less than five pounds. However, only two were infants weighing more than 3 pounds 12 ounces. This disorder developed in 43 percent of those infants weighing less than four pounds at birth.

Although retrolental fibroplasia may become arrested at any stage of development, in no case was definite regression of the disease observed in this study once advanced neovascularization or retinal separation occurred. No correlation between the incidence of retrolental fibroplasia and myopia was noted.

Retinopathy of prematurity is due to an abnormal response of the retina of the premature infant to a relative state of hypoxia. The highest incidence rate occurs in the premature infants who are brought rapidly from an environment of high oxygen tension to normal atmospheric conditions.

Premature infants should be given only that amount of supplemental oxygen compatible with normal respiration and survival, preferably under 40 percent, and for the briefest possible time. They should be gradually weaned from high oxygen concentrations to normal oxygen tension in air.

It has become mandatory for all premature nurseries to be equipped with a standard and acceptable oxygen analyzer and all nursery personnel should be trained in its proper use

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PDSTGRADUATE COURSE AT WALTER REED

A short postgraduate course in gastroenterology and metabolism with special emphasis on military applications will be held at Walter Reed Army Hospital Washington D C 9 through 13 May 1955 The course designed to keep Army medical officers in outlying installations abreast of recent medical advances and to keep the health of Army personnel at a high level is offered to both active and inactive duty medical officers as well as physicians from other governmental agencies medical officers of the Navy and Air Force and civilian physicians

VASOPRESSIN (PITRESSIN) IN DIURESIS OF RENAL INSUFFICIENCY

Studies in Patients With Hemorrhagic Fever

JAMES C SYNER *Captain, MC USA*
ROBERT MARKELS *Captain, MC USA*

THE CLINICAL, epidemiologic, and historical features of hemorrhagic fever have been described by Pruitt and Cleve.¹ Copious flow of urine of low specific gravity is characteristic of the diuretic phase of renal insufficiency complicating this disease. These authors report the occurrence of this complication in 60 percent of their patients. During the height of diuresis a 24-hour output of urine of eight to 12 liters is not uncommon, and one patient observed by us had a 24 hour output of 14 liters.

This study was designed to determine the ability of vasopressin (pitressin), the posterior pituitary antidiuretic factor, to effect tubular resorption of water and to increase the specific gravity of urine in patients with diuresis of low specific-gravity urine. Such a study would aid in identifying the pathogenesis of this phase as one of renal tubular defect or of absence or diminution of the antidiuretic factor from the posterior pituitary gland.

The combined evidence from laboratory findings and clinical observations brought about the question of the role of the pituitary in diuresis which simulates that of diabetes insipidus. Autopsy findings have revealed severe hemorrhage and necrosis^{1, 2} in the pituitary gland. Hemorrhage into the gland substance results in a compression destruction secondary to the gland's confining capsule and its anatomic position in the skull. The findings also have suggested multiple areas of infarction secondary to hemorrhage and thrombosis. Clinical evidence suggestive of pituitary insufficiency has consisted of profound weight loss, marked weakness and malaise, lack of libido with impotency, delay in facial beard growth, and diminished 24-hour 17 keto-steroid excretion.

PLAN OF STUDY

Eight patients with the confirmed diagnosis of hemorrhagic fever complicated by renal insufficiency were studied. These

From 48th Surgical Hospital Korea. Capt. Syner is now ssig d t Wal: R d A my Ho p tal Washington O C.

patients were voiding four to six liters of low specific gravity urine daily. They had abnormal excretion of phenolsulfonphthalein and failed to concentrate urine on withdrawal of water. The procedure was as follows:

- 1 Patients were kept at bed rest in a fasting state.
- 2 An indwelling catheter was inserted and the bladder emptied.
- 3 Two hundred and fifty cubic centimeters of water were given every 30 minutes throughout the testing period. The bladder was emptied every 30 minutes. The first specimen was discarded and succeeding ones were measured for volume and specific gravity.
- 4 After 90 minutes of hydration as described above, one cubic centimeter (20 pressor units) of vasopressin was injected subcutaneously.
- 5 At 30 and 60 minutes following the vasopressin injection, urine specimens were collected and volume and specific gravity recorded.

In addition to volume and specific gravity, the specimens were also tested for albumin. Continuous para-aminohippurate (PAH) and endogenous creatinine clearance as indexes of renal plasma flow and glomerular filtration respectively were carried out during this procedure. The results of these functions before and after the administration of vasopressin will be reported in the future.

PHARMACOLOGY OF VASOPRESSIN

An active extract of the posterior pituitary was first obtained in 1894 by Oliver and Schafer.¹ Subsequent fractionation and purification of the crude extract has led to identification of a pressor, antidiuretic, oxytocic, and melanophore-depressing principle. The antidiuretic action of this relatively crude material was first described in 1901 by Magnus and Schafer, who noted the specific renal effect as an increase in the resorption of water and a consequent reduction in urinary flow. In 1928 Kamm separated posterior pituitary extract into an oxytocic fraction called oxytocin (pitocin) and a pressor fraction (vasopressin). It is the latter which contains the antidiuretic factor.

Oldham and others outlined the pharmacologic effects of vasopressin as follows: (1) increase in blood pressure, (2) suppression of urine secretion, (3) stimulation of gut musculature, (4) constriction of blood vessels, and (5) increase in blood sugar due to antagonizing effect against insulin.

Clinical and experimental studies support the view that diabetes insipidus is due to loss or diminution of the antidiuretic factor from the posterior lobe. Gilman and Goodman reported that the hormone maintains an equable water balance by acting

in an antagonistic fashion to the adrenal cortex and to a diuretic substance in the anterior lobe. Best and Taylor⁸ stated that removal or destruction of the entire pituitary by disease does not lead to the development of diabetes insipidus. Others have documented that complete hypophysectomy results only in transient diabetes insipidus.^{7,9-11} The presence of a functioning anterior lobe, as well as the inactivation of the posterior lobe, is essential for the maintenance of permanent diabetes insipidus. Although it is believed that the anterior lobe plays a role in water metabolism by secreting a diuretic substance, a specific diuretic factor has not yet been isolated from the anterior lobe.¹⁰

Significant differences between the posterior pituitary extract for obstetrical use (pituirin) and the antidiuretic substance were observed by Ham and associates.¹² They compared the antidiuretic substance of human and rat urine with commercial posterior pituitary extract (pituirin) with respect to (1) dialysis through cellophane, (2) ultracentrifugation, and (3) urinary chloride excretion. In these three respects the antidiuretic substance in human and rat urine had different physical and biologic properties from those of the antidiuretic factor of the posterior pituitary extract.

Wall¹³ reported that the site of action of the antidiuretic factor of the posterior pituitary was the loop of Henle of the renal tubule. He further reported that the action of posterior pituitary extract is antagonized by xanthines and mercurial diuretics.

DISCUSSION

The use of extract from the posterior pituitary in the study of renal function is not new.¹¹⁻¹⁹ Fishberg¹⁹ believed that specific gravity tests for renal function are the most useful tests available. Sodeman and Engelhardt¹¹⁻¹⁶ advocated the use of posterior pituitary extract for a renal function test. They noted that it provided a concentration test without prolonged restriction of fluids, and gave reliable results in the presence of ascites or cardiac edema. They found that 10 U S P posterior pituitary units would inhibit in 15 minutes the diuresis normally produced by ingestion of 1600 cc of water. Maximum concentration occurred within the first two hours, and in normal persons specific gravity varied from 1.023 to 1.040. In patients with impaired renal function, the maximum specific gravity was considerably reduced. This is in agreement with our results (table 1). In our patients 1.015, which is considerably below normal, was the maximum concentration. The average range was between 1.004 and 1.008. These results indicate renal insufficiency of variable degrees due to tubular defect rather than to absence or diminution of the antidiuretic substance.

TABLE 1 Ureteral blood pressure in eight patients 60 minutes before and after the administration of 20 per cent ureteral vasopressin

Patient	Urine albumin	Ureteral time (sec)		Specific gravity		Blood pressure	
		Before	After	Before	After	Before	After
1	Neg	714	382	1.003	1.006	170/90	174/120
2	Neg	602	696	1.000	1.003	124/80	130/80
3	Neg	450	180	1.003	1.010	122/80	126/72
4	Trace	303	282	1.000	1.004	130/100	170/120
5	Neg	387	276	1.004	1.003	110/56	130/84
6	Neg	9	122	1.002	1.006	140/76	128/90
7	Neg	232	90	1.005	1.008	164/108	164/120
8	Neg	885	64	1.001	1.015	110/80	118/90

Pasqualini¹⁷ believed that the measure of urine volume following vasopressin injection was more appropriate than the measurement of urine concentration. He reasoned that because water resorption is one of the principal functions of renal tubules, and because vasopressin acts directly on the renal tubules to produce an increase in water resorption, this approach is a more direct way of estimating loss of function. When the kidney loses its capacity to effect water resorption, the antidiuretic hormone also loses its effect. He showed that normal patients had 16 to 76 cc (an average of 36.2 cc) of urine output following the intake of 1,000 cc of water and the injection of 10 pressor units of vasopressin. In normal patients amounts higher than 80 cc were never seen. In 19 nephritic patients amounts were always greater than 80 cc, and in some the antidiuretic effect had completely disappeared.

Our results are in agreement with those reported by Pasqualini in 19 nephritic patients. They are indicative of renal insufficiency of variable degrees due to tubular defect and demonstrate that when the kidney loses its capacity to effect water resorption the antidiuretic hormone also loses its effect. Decreased or absent action of vasopressin was noted in all patients except the eighth (table 1). This patient had a sustained and marked gastrointestinal reaction to the vasopressin injection and the vomitus measured 400 cc. Even so his urine output was far in excess of Pasqualini's average finding in normal persons. Findings in the second patient suggest complete absence of response to the antidiuretic action of vasopressin injection because the urine volume following the injection was greater (696 cc) than before (602 cc).

Pasqualini used the intramuscular route of administration and estimated that maximum response was obtained in 30 minutes. Therefore, he used urine volume obtained between 60 to 90 minutes following injection. We used the subcutaneous route of administration and estimated that maximum response was obtained in five to 10 minutes (this estimation was substantiated by blood pressure response and onset of symptoms characteristic of the effect of vasopressin injection). Therefore, we measured the urine volumes obtained within the first 60 minutes. We believe that such close similarity in experimental design allows comparison of data for purposes of drawing conclusions.

It is in order to question how the posterior pituitary extract, as a test of renal function, compares with other standard renal tests. Wail¹⁸ was interested in this problem and made such comparative studies in a large number of normal persons and patients with impaired renal function. He found that the results of testing with posterior pituitary extract in normal persons, hypertensive

patients without renal failure and patients with renal insufficiency compared favorably with those of the Fishborg concentration and pheaoisulfonphthalein tests

CONCLUSIONS

In patients with hemorrhagic fever with multiple organ involvement, concern arises as to the role of each either separately or in combination, in producing observed abnormalities. With both clinical and laboratory evidence of severe pituitary involvement, the diuretic phase of renal insufficiency in this disease required clarification because of its resemblance to diabetes insipidus.

In both urine volume (water resorption) and specific gravity (urine concentration) vasopressin injection failed to effect a normal response as defined by Pasqualini's basic work. The results indicate (1) Presence of renal insufficiency of variable degrees due to tubular defect, and (2) loss of the kidney's capacity to effect water resorption or urine concentration resulting in loss of the antidiuretic hormone's effect.

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NEW HEMOGLOBIN STANDARD

The National Research Council announces that clinical laboratories are invited to participate in a field trial for use of certified standard solutions of cyanmethemoglobin for use in hemoglobinometry. The objective would be the establishment of a uniform hemoglobin standard available nationally which with a single method of analysis will permit comparable results from month to month and in all parts of the country. The minimum requirement for participation is agreement to

- 1 Report actual photometric readings of three standard solutions as routinely performed

- 2 Answer a simple questionnaire on the influence of various factors on the results of the hemoglobin determinations which will assist the council in its long-range plans for making this standard available on a national scale

- 3 Co-operate in the analysis and reporting of (a) an unknown solution of cyanmethemoglobin and (b) an unknown sample of blood

Distribution without charge will be made to civilian laboratories by the College of American Pathologists 203 North Wabash Avenue Chicago Ill to military and government laboratories by the Army Medical Service Graduate School the Navy Bureau of Medicine and Surgery the Air Force Surgeon General's Office and the Veterans Administration and to laboratories in Canada through the Division on Medical Research National Research Council Ottawa Ontario Canada. Laboratories desiring to co-operate are requested to apply now to the distributing agency with which they are most closely associated.

operation on a 30 year old laboring man who had chronic ulceration of the right lower leg at the site of previous injury was undertaken in stages first by surgically elevating the flap and then several weeks later by suturing it to the site of the defect. The present technic basically the same has been evolved over the years by the addition of various refinements aimed at increasing the facility and safety of the procedure. The more significant advances include improvement of the so called delay procedures preoperative application of the plaster casts and the use of split skin grafts to cover the pedicle donor site. The technic to be described is a standard one for which we claim no share in originating. It has been employed in a number of cases over the past two years at this institution with uniform success.

PRELIMINARY PLANNING AND PROCEDURES

Careful planning of the entire procedure is the first fundamental of the successful cross leg transfer. The surgeon must know before the incision is made exactly what he will accomplish at each stage. He must know precisely the area and amount of tissue which will be used for the pedicle and he must establish its suitability from the standpoint of circulation and position. Uncertainty on any of these points should strongly counsel delay because it carries with it an increased risk of destroying the most valuable source of coverage and thereby rendering later steps much more difficult and time consuming.

The first step in the planning is the selection of the donor site for the pedicle. This must provide an adequate area of completely normal tissue in an accessible part of the donor limb which should ideally be left with the least possible secondary deformity. From the standpoint of vascularity the medial aspect of the calf and the anterior aspect of the thigh have been shown to be the most suitable. However it must be emphasized that through the use of sufficient delay procedures pedicles may be raised from any site and based in any direction even retrograde on the limb. The so-called delay procedures consist of staged elevations of the pedicle over a period of several weeks for the purpose of increasing the circulation through its base before the actual transfer (fig 1).

Once the general area has been selected the exact outline of the flap should be accurately mapped preoperatively. This involves measurement of the defect to be filled. In an old injury because the area to be covered may enlarge somewhat after the excision of scar tissue the pedicle should be planned slightly larger than the defect. In outlining this area it is convenient

to cut a strip of adhesive tape to the size of the proposed flap. The most suitable donor area can then be determined empirically by approximating the legs in various positions and testing their

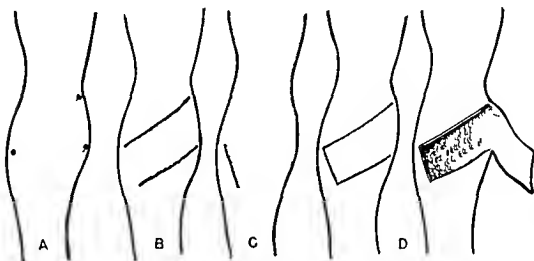


Figure 1 Diagrammatic sketches of the "delay procedures" in preparing the pedicle to cover the defect shown in figure 7 (A) The flap is outlined on the leg; the four corners are marked with silver nitrate (B) The incisions are made as shown by the heavy lines; the pedicle indicated by stippling, is elevated from the deep fascia; the incisions are sutured (C) About two weeks later the distal end is incised and undermined as marked (D) Tracing the previous incisions the entire flap is undermined and elevated; the blood supply through the attached base being adequate. The flap is now ready for the actual transfer procedure

relative practicability with the adhesive tape strip (fig 2). Points to be especially noted include the presence of sufficient tissue, the avoidance of tension, torsion, and pressure, and a comfortable cross leg position which will not interfere with excretory function. Upon fulfillment of these requirements the area selected for the pedicle is outlined with dye and the salient points marked with silver nitrate introduced intradermally on a fine hypodermic needle (fig 3).

After accurate delineation of the flap and sufficient "delay procedures" have been accomplished (if needed) to assure adequate circulation to the flap, it is advantageous to apply the plaster casts to each leg preoperatively. The position to be maintained by each limb is determined using the adhesive strip, and the casts designed accordingly. This permits easier application of the casts because the patient is able to assist in holding the desired position, and in the operating room it will mean greater speed and efficiency as well as less hazard to the pedicle. As described by Stark, a window is left in each cast, exposing the donor and recipient sites of the pedicle. The legs are not, however, attached in the cross leg position until after

the completion of the operative procedure. At operation sterility and adequate exposure are easily achieved through proper draping of the areas exposed through the casts and the only further need for plaster is in the fixation of the cross leg posture.



Fig. 2 The adhesive flap cut at the site of the pedicle. The pedicle is based at a 10-degree angle. (The photograph is a composite of the patient's position and the pedicle of which are visible are marked on the skin with silver ink.)

THE TRANSFER OPERATION

The actual transfer of the pedicle is undertaken only after the most careful planning has convinced the surgeon that it can be accomplished as designed. Because of the extent of the surgery involved it should be performed under general or spinal anesthesia. The pedicle is elevated first by following the predetermined outline and carefully dissecting it from the underlying fascia (fig. 4). In this step the most meticulous technique is essential and all tension, torsion and pressure must be avoided. In most cases it is best that the surgeon alone be responsible for all maneuvers with the flap and that only fine hooks and forceps be used in handling it to avoid every possible degree of tissue necrosis.

After the pedicle is cut, the graft is placed in the defect. The heavy line represents the pedicle. The graft is placed in the defect and the pedicle is cut. The graft is placed in the defect and the pedicle is cut. The graft is placed in the defect and the pedicle is cut.

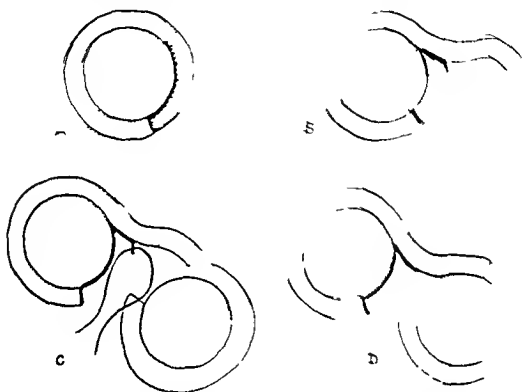


Figure 4. Cross sectional sketches of the pedicle flap procedure. (A) shows the depth of incision and the pedicle flap. (B) shows the heavy line representing the pedicle. (C) shows the graft in place with the pedicle flap. (D) shows the graft in place with the pedicle flap.

because it provides, after suture of the graft to the near edge of the defect a complete closure. It thus eliminates an open granulating wound, resultant exudation and maceration of the surrounding dressings.

The open area or scar tissue is excised so as to provide a smooth surface. The subcutaneous tissue is then sutured. The pedicle graft will then gradually pend to the normal level.

tirely on the circulation established between it and this surrounding area. The latter must therefore provide the best possible conditions for augmenting this circulation.



The legs are next brought together and long interrupted silk sutures passed through the free edge of the graft and the near edge of the defect, completely covering the open area on the donor leg (fig 4). The pedicle is then sutured into the defect over as much of its area as possible, using fine interrupted absorbable subcuticular sutures. The skin edges are accurately approximated without tension, using fine interrupted nonabsorbable sutures. If it is remembered that it is through this interface that the blood supply of the flap must eventually come, the reason for care becomes obvious. A nonadherent bulk dressing is then applied and the casts fixed in the cross leg position, using plaster bandage and braces as needed (figs 5 and 6).

Postoperatively the patient should be encouraged to move about and help himself as much as possible. To this end a trapeze is essential, and a system of weights to counterbalance the bulk of the casts may be of assistance. The wound may be dressed after several days, and thereafter only dressing necessitated by local exudation (which should ideally be minimal) need be performed. Removal of skin sutures after seven to 10 days is optional. Other care is routine.

It has been established that properly applied pedicle grafts have sufficient peripheral circulation in three weeks to permit survival of the pedicle base. There are numerous tests for verifying this. The simplest consists in compression of the proximal end of the flap with a rubber shod intestinal clamp. Sufficient pressure to interrupt the blood supply is maintained for several minutes during which time the graft is observed for color changes.

Usually the pedicle can be divided in one stage and the free edges on both the donor and recipient legs sutured at the same time. Occasionally a staged division and delayed suture of the cut edges is preferable.

Following this stage the recipient limb is again immobilized until healing is complete. The patient is then embarked on a program of progressive dependency and, as conditions permit, advanced to graduated periods of weight bearing. During this entire period elastic support to both limbs is essential. The institution of dependency or motion before healing is complete is to be avoided, and will be signalled by the appearance of blisters, blebs, hematomas, and hemorrhage beneath the grafts.

CASE REPORT

A 35 year-old man was transferred to this hospital about eight months after suffering a compound fracture of the lower right tibia and fibula.

in an automobile accident. Immediately after the accident the leg had been immobilized in a plaster cast which was removed five days later. The wound was necrotic infected and slow to heal. Although the fractures united well there was continuing and persistent ulceration of the skin with pain, edema and discoloration of the foot.

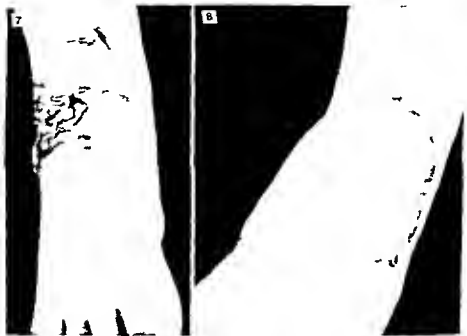


Figure 7 - Leg after leg eight months after a compound fracture. The skin ulcer after cast to bone there are two areas of persistent ulceration. Figure 8 - Postoperative view of the right lower leg (anteromedial aspect) one month after the operation. The covered, necrotic area has been reduced to heal by skin and subcutaneous tissue.

Figure 9 - Leg after leg eight months after injury. On the medial aspect there was an area of scar extending almost from one malleolus to the other. This scar was thin adherent to the bone and there were two areas. The foot was slightly edematous and there was a slight ulcer on the medial aspect. Figures 10, 11, 12, and 13 show the scar area being replaced by skin and subcutaneous tissue by the method described. Figure 14 shows healing at the site of the scar.

SUMMARY

Adequate skin and soft tissue coverage is essential for proper treatment of compound injuries of the extremities and is most beneficial if applied as early as possible. In the lower extremities the cross-leg pedicle flap provides a convenient and effective source of this coverage. For better results the procedure

must be carefully planned in advance and executed with the most meticulous technic to protect the vitality of the tissues. Helpful points of procedure include the use of an adhesive tape pattern in planning the flap, preoperative application of the casts, and the complete closure of the wound with a split skin graft over the donor site and open area of the pedicle.

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FROM THE PRESIDENT OF THE A M A

We should above all look to our own house and see that it is in order. As practitioners of medicine we have dedicated ourselves to the service of humanity. We should remember this at all times and in our private and public acts hold that thought as a torch before us. The forces that threaten the free world and that are attempting to undermine our institutions cannot be turned back by the power of armed might alone. Before they can destroy us they must corrupt us and weaken our moral fiber. We as physicians have an important part to play at this time of doubt and fear by maintaining and extending the health resources of our country. The problems that confront us we can solve if we have good will and if we rededicate ourselves to the high ideals of medicine. It is necessary that we solve them within the framework of our democracy so that our nation and its people may be strengthened and can meet with a united and resolute force the dangers that threaten us.

—WALTER B. MARTIN, M.D.

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THE NATURAL COURSE OF ACUTE NONSPECIFIC PERICARDITIS

DAVID B. CARMICHAEL, L. t. na. t. (MC) USN

ACUTE nonspecific pericarditis has become a distinct clinical entity since it was described in 1942 by Barnes and Burchell. The characteristics have been extensively reviewed and the clinical diagnosis is now made frequently and accurately.

Interest in the possibility of late effects following acute nonspecific pericarditis logically stems from two sources: the hope that study of late effects will afford some further insight into the cause and fundamental nature of the acute disease and continued interest in the cause of chronic constrictive pericarditis.

The following characteristics may be said to describe the natural course: (1) It is a benign disease; (2) recurrences are frequent; (3) late chest pain is common; (4) constrictive pericarditis is apparently not a late complication; and (5) the electrocardiogram may show persistent abnormalities.

A gratifying characteristic of this condition is its benign nature. Many authors have labeled it "acute benign pericarditis," taking this attribute into consideration. When the diagnosis is established, clinicians have the happy opportunity of informing an anxious family that the heart attack so closely resembling acute myocardial infarction was really a sheep in wolf's clothing.

One fatality has been reported in 1951. McCord and Taguchi reported the case of a 52-year-old white man who developed a pericardial friction rub on the third day of an illness characterized by anterior chest pain. Paroxysmal tachycardia occurred on two occasions and on the twelfth day shock supervened. When apparently improving on the fourteenth day the patient suddenly collapsed and died. He had received heparin and high-dose coumarin (dicumarol) throughout the course of his illness and the prothrombin time had been maintained below 25 percent of normal. Autopsy revealed bilateral pleural effusion and a hemorrhagic thickened adherent pericardium with 150 cc free blood in localized areas in the pericardial cavity. Microscopic examination

demonstrated a heavy infiltrate of lymphocytes, proliferation of fibroblastic tissue into the fibrin and clotted blood, and some separation and fragmentation of cardiac muscle fibers in areas where the thickened pericardium was directly contiguous. Reflection on this case in view of the report of Goldstein and Wolff² of hemorrhagic pericarditis during bishydroxycoumarin therapy leads one to wonder if this may not have actually been the process in this instance.

Other reports have described patients critically ill during the acute phase of the illness, but in all recovery occurred eventually. It is a safe conclusion that the prognosis for life is excellent.

Recurrences of acute nonspecific pericarditis are frequent. This characteristic led Burchell⁴ to use the term "acute relapsing pericarditis" and articles on this phenomenon have appeared in both the foreign and American literature. Tomlin and associates⁵ reported on a patient who had 19 recurrences. Table 1 lists the incidence of recurrences in patients in some of the larger series not specifically dealing with this characteristic. Recurrences occurred in six out of 28 patients observed in this hospital and in the U S Naval Hospital Great Lakes, Ill.

For several years following the acute illness a large number of patients will complain of transient bouts of sharp, stabbing pain in the left side of the chest or in the shoulder. Less commonly, the location is substernal and differentiation from angina pectoris may be difficult. In general, the pain following pericarditis is not necessarily related to effort, but is aggravated by deep inspiration, is unaccompanied by dyspnea and is unaffected by nitroglycerin. The mechanism of production of the pain is not known.

All available studies indicate that constrictive pericarditis is *not* a late complication of acute nonspecific pericarditis. Many patients have been followed into the second and third decades after the original illness and I am aware of no case of chronic constrictive pericarditis occurring in this large group. Three case reports, however, merit special attention.

CASES REPORTED IN THE LITERATURE

In 1951 we⁶ reported a 54-year old woman in whom a diagnosis of acute nonspecific pericarditis had been made in 1946. Fluoroscopic findings and roentgenograms of the chest at that time were considered to be within the range of normal, but four years later diminished amplitude of pulsations of the apical region was noted. Roentgenographic examinations revealed enlargement in the region of the left ventricle and a ring of calcium surrounding the apex of the heart. No findings of cardiac compression were present and the patient was not incapacitated.

In 1952 Freilich reported the case of a 52-year old man who was considered to have recurrent acute nonspecific pericarditis on five occasions. Roentgenographic and electrokymographic evidence deemed compatible with fibrosis or adhesive pericarditis was obtained. Although no findings of cardiac compression were observed the author suggested that this was a midpoint in the development of constrictive pericarditis and on the basis of this case suggested that acute nonspecific pericarditis be considered one of the precursors of the more serious chronic constrictive pericarditis.

TABLE 1. Incidence of constrictive pericarditis

Author	Number of patients	Number of operations	Percentage
Reynolds and Croft	4	0	0.0
Burchell	43	4	9.3
Cameron and Davidson	41	4	9.7
Levy and Pridmore	27	3	11.1
Gillies and Scott	9	1	11.1
Burns	13	2	15.3
Logan and Widdows	17	3	17.6
Dowd and O'Connell	4	1	25.0
Croft and Chalmers	11	3	27.3
Goyette	40	13	32.5
Friedman	5	2	40.0
Elliott	11	5	45.4
Pabner	28	6	21.4
Total	253	47	18.6

Pabner and associates recently reported the case of a 40-year-old man who entered the hospital with massive pericardial effusion necessitating three pericardial taps. Because of continuing signs of cardiac compression a pericardiectomy was performed two and one-half months after he initially came under observation. Several aspects of this case suggested a tuberculous cause and, in fact, the patient received 29 days of combined isoniazid (nydrazid) and streptomycin therapy prior to operation. Sections of the tissue removed at operation revealed no specific changes.

Two facts cannot be disputed: (1) occasional cases of chronic constrictive pericarditis relate a history of an illness earlier in life suggestive of acute pericarditis or acute pleuritis and (?) the cause of chronic constrictive pericarditis is often in doubt.

These facts, however, do not warrant a conclusion of cause and effect. Analysis of the case reports reveals that in nearly every instance signs of cardiac compression followed closely on the heels of the acute pericarditis. This sequence does not conform to results documented in the many large series of acute nonspecific pericarditis.

Changes have been observed in the electrocardiograms several years after the acute illness in several instances. In five of 41 patients changes not explained on the basis of other heart disease were observed.⁶ Others have reported similar findings and Furman⁹ described the case of a physician three years after his acute illness who demonstrated residual "coving" of T waves in leads II, III and V₆. Godfrey¹⁰ reported residual abnormalities, and Goyette¹¹ recounted one patient in his recent group in whom the electrocardiographic findings were abnormal at the time of discharge. Residual scarring of the subepicardial myocardium coupled with some pericardial thickening may prove to be the cause of these changes.

SUMMARY

The natural course of acute nonspecific pericarditis includes the following characteristics: benign nature, tendency to recurrences, late chest pain, lack of relationship to chronic constrictive pericarditis, and occasional late electrocardiographic changes.

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MANAGEMENT OF THE ELDERLY PATIENT

Unfortunately many medical men have as yet not grasped the technic of the management of the elderly patient. Many do not care to give the attention necessary for good medical treatment. Our schools certainly are partially at fault for not having seen the handwriting on the wall and recognizing the need for courses specially designed to instruct the medical student in the proper care of the older patient. The need for the development of a proper psychologic approach to the elderly patient's illness is of much greater importance than the knowledge of what to do for his failing heart. To tell a patient he has hardening of the arteries that his dizziness comes from old age that he cannot hope to be much better and that he will have to learn to live with his sickness serves no purpose but to make his last days more miserable and increase the practice of the other physician who is called in and offers lots of hope and encouragement along with appropriate scientific management. This may seem a bit exaggerated but I can assure you it is all too often a fact and the general practitioners are not always to blame. It is too bad that some of the leaders in our profession are so absorbed in the scientific management of the patient's illness that they forget entirely to treat him as a personality.

—A HAZEN PRICE M D

H p H p tal B U t m

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A NAVAL RECRUIT ATTITUDE TEST

HERMAN B. MOLISH *Commander (MSC) USNR*

THE DEVELOPMENT of a projective test specifically aimed at measuring various attitudes of young naval recruits toward the sundry problems of adjustment to military life is considered essential.

Although the usual psychiatric screening of naval recruits on their arrival at this training station has been effective in delineating the most evident character disorders, psychotic disturbances, and psychoneuroses, the necessary brevity of such examination by the psychiatrists could not be aimed at determining how the various components of a particular personality structure would manifest themselves in attitudes toward military life. For example, during this brief psychiatric screening the general impression of a passive dependent personality structure may be quite evident. However, the manner in which this character structure might interfere with an adequate adjustment to recruit training would be difficult to assess. Would the problem of adjustment finally appear in homesickness of an acute nature? What was the motivating force, conscious or unconscious, for a particular youth's enlistment in the Navy? How would he react to authority? What would be his role in a highly masculine competitive environment, and what would be the effect of military life upon his self-concept in his interpersonal relations with both his military and civilian peers?

The primary rationale of the construction of the Naval Recruit Attitude Test, to be described, was an attempt to measure, and possibly predict, the area of conflict which may occur in the adjustment to routine naval recruit training. Let us consider our hypothetical passive-dependent recruit. In what area of adjustment to military life will the greatest conflict, if any, occur? Homesickness may be acute and, if not the cryptic nostalgic type, it may subside. A much more serious conflict may occur in relation to his doubt of his self-adequacy and masculinity. He may begin to display ruminative guilt feelings about his enlistment if it was against the advice of his parents. His reaction to authority may be extremely threatening to his self-esteem, and result in ruminative doubt as to his ability to learn. On the other hand, despite all the initial evidence of passive dependency which he may pre-

From U. S. Naval Training Station, P. O. Box 24, Bethesda, Md. Commander Molish is now assigned to U. S. Naval Hospital, Bethesda, Md.

ment, his over all adjustment may be worked through with a minimal amount of conflict. Furthermore the degree and quality of such conflicts and the ego defenses used to resolve them are of



Fig. 1 (cards 1 through 5) To motivation for enlistment.

importance in determining the adequacy of a recruit for continued naval service. Thus the construction of the test was aimed at measuring the exact areas of conflict affected in adjustment to recruit training.

The present test figures were drawn in the training aids section of this naval training center. The scenes were depicted from a written description which I had submitted. Because the present form of the test is considered experimental the test figures were reproduced from the originals by a simple duplicating process.

THE PRESENT TEST SERIES

In the present experimental form of the test there are 26 pictures. Unlike other thematic apperception tests^{1, 2} these pictures are built entirely around the recruit training situation and the areas in which possible conflict may arise in adjustment to it. The pictures are grouped in such order that several successive

cards aim at the uncovering of attitudes and areas of conflict in the various situations which arise in routine recruit training. The pictures are presented in serial order from 1 through 26. This order follows closely the sequence of events in a recruit's daily adjustment in training from the time he contemplates enlistment (card 1) to the time he completes his training and goes aboard a ship (card 25).



Figure 2 (cards 6 through 10) *The reaction to military life series.*

The series of 26 cards is grouped in such order that several successive cards are directed at the uncovering of attitudes and conflicts in a particular phase of recruit training.

Cards 1 through 5 (fig. 1) are concerned with motivation for enlistment, reaction of parents to enlistment, and numerous facets of the interaction between the recruit and his parents in respect to his separation from the family.

The initial reactions to military life from the first incident of imposed authority (the regulation haircut) to the effects of separation from the family (homesickness) are illustrated in cards 6 through 10 (fig. 2).

In cards 11 through 14 (fig. 3) attitudes toward military discipline and reactions to authority in a military setting are investigated.

Cards 15 through 18 (fig 4) are designed to measure aspects of the self concept in competitive masculine roles and to detect homosexual conflict.



Figure 3 (a d s 11 t h o g h 14) The a t h o r t y s e i

Cards 19 through 22 (fig 5) were primarily formulated to uncover conflicts within the sexual sphere guilt, phobic mechanisms and masculinity femininity conflicts The model for card 21 is 13MF in the Murray Thematic Apperception Test. The male figure has been drawn in naval uniform The introduction of the family portrait on the wall attempts to uncover guilt feelings in respect to the mother and father

Cards 23 and 24 (fig 6) investigate the recruit's adjustment to his peers in civilian life, and cards 25 and 26 (fig 7) study his orientation toward the naval service, his attitudes and conflicts concerning sea duty, and his reactions to stress in combat



Figure 4 (cards 15 through 18) The masculinity series.

Each successive card in a particular series centers about the various "anxieties" of daily adjustment to routine training, and each is designed to be more anxiety provoking than its predecessor. Thus, in the authority series (cards 11 through 14) the subject is faced with ever increasing threat. In card 11, the company commander is berating the entire company. In card 12, an individual recruit is being berated for some infraction of regulations.

Conflict increases in card 13 where the recruit is faced with a Captain's mast. Finally in card 14 he is confined to the brig.



Figure 5 (cards 19 through 22) The better adjustment series.

It was hoped that such a method of presentation would enable us to evaluate the severity of the recruit's reaction under an ever increasing and prolonged intensification of the threatening stimuli. The defenses of the ego which are mustered to cope with the ever increasing conflict and their successes or failures could then be determined. Furthermore each of the armatures of adjustment could be qualitatively examined by this method and evaluated in reference to their importance in predicting success or failure in adjustment to naval life. Also the total overall reac-



Figure 6 (cards 23 and 24) *The civilian adjustment series.*

tion of a recruit could be assessed by his response throughout the entire test series. This in itself would contribute much to an understanding of the total personality structure and how much of a psychiatric hazard might be expected with continued naval service.



Figure 7 (cards 25 and 26) *The reaction to combat series.*

METHOD OF ADMINISTRATION

The test can be given either individually or in a group of any size. The group administration of the test is accomplished by projecting the test figures on a screen with an opaque projector. The cards are presented in order from 1 through 26 and each is exposed for five minutes. The responses of each subject are written in a prepared booklet. The following instructions are given:

In this test you will be shown a series of cards projected upon a screen. This test tells a story of a young man just like yourself and the experiences he meets from the time he decided to enlist in the Navy until he goes aboard ship. Your task is to write a story about each of the cards shown to you. In each of these stories be sure to describe what is happening in the picture, what the young man feels and thinks about the situation he is in, and what the final outcome will be. You will be allowed five minutes for each card.

SOME REPRESENTATIVE PROTOCOLS

The following excerpts from the protocols of the recruits have been selected to demonstrate the value of the Naval Recruit Attitude Test in disclosing various attitudes toward naval recruit training.

For the sake of comparison the protocols selected are those of a recruit (subject A) who eventually was discharged from the naval service by reason of inaptitude and with the diagnosis of "schizoid personality," and those of subject B who completed recruit training without any apparent difficulty.

SUBJECT A

In subject A conflict centered about his enlistment is revealed in his associations to cards 1, 2, and 3.

Card 1. One time there was a fellow who went downtown to get some clothes and to his wonder there was a sign that said "Join the Navy." Like any other ordinary fellow he inquired about it. The man, a recruiter, talked him into joining for as of now he didn't know whatever made him sign up. He should have thought twice. He sometimes prays to God that he should have stayed out. For it is written: "That I would do I would not do, and that that I would not do I would do."

Card 2. His grandfather told him he could go if he wanted to, but "I don't think you'd like it and are ready for it yet." Now that time has passed, I think of these words as if to hear him again. Now I wished that I had listened. I won't doubt his words again as long as I may live. It pays to listen to a person with experience than to experiment on yourself.

Card 3 "Son I don't want you to get into something like that as of yet, because you know you can't stand anyone hollering at you all the time. It makes you nervous and you know that you lose your temper and do things you don't mean to do. Maybe you are mixed up or something. Now I know I'm mixed up. I can't take orders straight and hear it. "And besides you'd have to finish school because I want you to. Don't do those foolish things—they'll get you sooner or later."

Psychiatric evaluation of the recruit indicated the following pertinent facts concerning his enlistment. The psychiatric examiner expressed the opinion that this recruit "joined the Navy somewhat impulsively probably because he was unhappy after his mother's remarriage was not getting along with his grandfather and was dissatisfied with the drab reality of his home situation compared to that of his dreams. He enlisted in the Navy "For completion of my high school education and the pleasure." At the time of his initial examination he expressed what the psychiatrist described as an inappropriate desire to be a chaplain. At the same time the recruit reported he was bothered with nervousness and he felt he would have trouble making a good adjustment to the service.

His reaction to card 2, in which the grandfather is given the substitute role of the father, is borne out by the actual findings in the personal history. The recruit's parents were separated when he was six years of age. He then lived in several foster homes and on four separate occasions with his grandfather. He had continual difficulty in adjusting to the foster home situations and also felt that his grandfather did not approve of him. His grandfather told him that "I am different from all my brothers. He says I am sneaky and untidy! I'll walk out if I get mad, and I can't stand to be hollered at or nothing."

In card 3 the critical attitude of the recruit's mother toward his enlistment is of import. The past personal history indicated that he continually blamed his mother for the separation from his father. He gradually withdrew from the mother, and when she remarried he could not get along with the stepfather. When the mother remarried a third time, he refused to live with her, saying "I only wanted one father."

In cards 8, 9, and 10 are portrayed intense feelings of isolation and moodiness. Feelings of almost paranoid martyrdom are emphasized in his expressions of "A man crying to himself in his own torture." "You feel like a prisoner of destiny."

Psychiatric evaluation noted that this recruit had been intermittently depressed and considered suicide during his teen years. He had always been seclusive and preoccupied with grandiose ideas of what he would like to be. In his daydreams, he planned

to go to college and become a doctor or a world history teacher. The meekness and preoccupation expressed in these three cards is also corroborated by the company commander's report of the recruit's progress. This man is moody and hard to observe. He is unclean and tries to run everyone. He is sad and depressed and doesn't seem to be able to do anything right no matter how much instruction he is given.

In cards 11, 12, and 13, not only the intense reaction to authority is noted but the paranoid suspiciousness and martyrlike attitude are expressed.

Card 11. What's he beefing about? This is a man's first mistake. I just can't take it. What am I going to do? God give me strength to get out of this place. What am I? A dog to be bitten by a man? This mistake he hollers at you about may mean reassignment or retraining and you can't take that too after all these weeks—oh no!

Card 12. Leave me alone. I said to myself. Why pick on me? The other fellows are worse than I. I asked him how I stand in the company and he said you're one of the best boys in the company. But does he think I believe that when I read his eyes that said. Turn your back and you are a dead goose. It's true. He did strike me like a cobra strikes at a mongoose or human. He looks harmless but poison as fast.

Card 13. I did have some dirty clothes in my locker the first week. I just didn't understand the procedure on this. So he takes me to battalion mess. I could see the laughter in his eyes—a laugh of what I don't know.

In actual interviews with the psychiatrist, this paranoid suspiciousness was ventilated by the recruit. The fellows in the company are two-faced. They will stab you in the back. I can't explain it.

The recruit's adjustment was totally unsatisfactory. His progress in training was poor. He often argued and picked fights with his shipmates and responded to orders poorly and with resentment. He accumulated 25 demerits for deficiencies in his personal hygiene and continued even after reprimand to be objectionably dirty and untidy. The psychiatric opinion was that an adjustment to the naval service was impossible in view of his seclusive egocentric manner of relating to people and his attempt to compensate for his internal unhappiness by immature and boisterous behavior.

The culmination of all the conflicts expressed by this recruit is adequately portrayed in cards 25 and 26 which uncover the real threat that sea duty and combat situations would present to him.

Cord 25 I couldn't stand all that water. It would run me crazy. The place would make me feel crowded inside. I wouldn't like the sea. I can't take the Navy now. It's heart breaking but I just can't.

Cord 26 I would be nervous and scared of death anyway. I'd probably go overboard. I can swim but a person can last so long in one place at a certain time he must move. The sea is for somebody he can take it like boot camp.

SUBJECT B

This is a 17 year old recruit who completed his recruit training without apparent difficulty. His associations to the same cards discussed in the case of subject A are presented below for comparison.

Cord 1 He thinks it over seriously trying to cover all the angles. He wonders if he will like it since so much time is spent at sea. He thinks he would like the life but is a little shy about finding out the details from the recruiting officer. He thinks of what he has accomplished in the way of a vocation. He sees possible success in a Navy career and finally decides to enter the office and secure all the information he can obtain on the new adventure.

Cord 2 He takes home information on the Navy to show his parents. His father is rather dubious of the idea at first but is reluctant to influence his son either way. He sees good points and bad points and finally tells his son that the decision is up to him to make since he is now a man.

Cord 3 His mother is also informed of his intentions. With his mother the boy has a more difficult job in getting his other parent's mind open to the idea. His mother is more emotional than his father and he cannot talk man-to-man with her. He doesn't want to leave home but he cannot continue to remain a dependent. Although it is a difficult decision after the talk with his mother he sticks to his first decision.

Cord 8 The first day was a long one but it finally is time for bed. He is not too sleepy and many thoughts run through his mind. He wonders if it was wise and if it is what he really wants. He thinks about his folks and finally drops off to sleep wondering what will happen next.

Cord 9 He meets many new fellows and for a time he forgets all about home. But after a while when the newness of the life wears off somewhat he begins to think of home, his folks and his friends. He soon finds himself wishing he were home and he is not in the happy mood his friends are in.

Card 10 He stands watch frequently and this gives him more time than ever to think. He is beginning to realize there is more to the Navy than he thought. This watch business is something new to him. He finds it hard to stay up practically all night after being used to plenty of sleep while at home. He also realizes however that this is part of his training and it will benefit him later on.

Card 11 He gets his first taste of Navy discipline. He finds that Navy chiefs are not to be trifled with. He also finds that it doesn't pay to be impudent, disrespectful or thick headed. While he and his shipmates stand at attention their commander hurls invectives right and left. He decides to learn the right way to do things and escapes being chewed out.

Card 12 He tries hard to do everything according to instructions but somehow or other he slips up. He did not mean to do wrong but there it is. He receives a severe tongue lashing from the company commander and feels like two cents for the rest of the day. He again resolves to learn one way or the other.

Card 13 He is brought before the captain to receive punishment for his misdemeanor. He feels terrible and wonders what they will do with him. All the while the company commander tells him about it.

Card 26 After he returns from leave he is reassigned to a ship. On his first voyage the ship is hit by the enemy and the order to abandon ship is given. He is terrified for a moment but his training saves him, and he is saved.

It should be emphasized that nothing is known at this time about this recruit's adjustment to the naval service beyond the period of recruit training. Although there are conflicts noted in some of his associations, the fact remains that he completed his recruit training without apparent difficulty. In spite of his rather passively dependent attitude, his homesickness and his over sensitivity to criticism by authority, he was able to make the initial adjustment to naval service.

SUMMARY

The primary objective of this article is to introduce the experimental form of a thematic apperception test which is unique in its construction and serial order of presentation. Some modification of the Thematic Apperception Test has already been applied by Briggs in assessing naval personnel. The Naval Recruit Attitude Test however has been specifically constructed for the recruit training situation as an attempt to apply a projective technique to the measurement of the various areas of conflict experienced by recruits in adjusting to routine training.

The present test employs what is believed to be the best device in thematic apperception tests. By the presentation of cards centered about the recruit's adjustment and by successively increasing the intensity of the stimuli, the reaction to ever more complex

At the present time, standardization procedures on the records of about 2,000 recruits who were trained without serious difficulty. These recruits were administered in a group form after their first time was selected because after one year of service they had the opportunity to have experienced most of the types of cards which would have occurred. Records of recruits who were discharged from the naval service and whose ability are also available for comparison. Statistically significant distinguishing characteristics in the phase of the research will be presented.

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SICKLE CELL ANEMIA

The abnormal hemoglobin in individuals who are sickle cell anemic crystallizes on deoxygenation. Crystallization within erythrocytes produces relative spiculate forms which pass with more difficulty than do normal cells. It has been demonstrated that sickle cells cannot increase in the viscosity of blood as much as normal cells sickled as compared with oxygenated cells. The normal shape is lost and the cells are distorted. Increased viscosity of blood flow and tends to produce capillary blockage and sequestration of red cells in the spleen. The blood causes hypoxia and hypoxia causes the sickling process.

—COLIN F. VOX,
in *Proceedings*
of the International

1965) in the United States the law provided that grants for land grants was

CARE OF DISABLED VETERANS

BENNIE A. MOXNESS C Ion I USAF (MC)

MEDICAL care and financial relief of the disabled veteran has been of concern to our country since the earliest colonial period. Likewise the care of the poor, ill or injured soldiers and sailors who served in the various wars have been a concern of European countries for several centuries. In a brief résumé of the problem it is sometimes difficult to differentiate between benefits granted to the men who were disabled in war and those benefits conferred in general pension legislation.

In England after the decay of the Feudal system when armies were demobilized or when soldiers and sailors were discharged because of disabilities there was nothing that these men could do to earn a livelihood. Thus they became penniless, often becoming beggars, vagabonds and criminals. Many of them found refuge in the monasteries but when the monasteries disappeared the penniless veterans had no place in which to obtain shelter and food. Problems such as these led to the passage of national relief acts for soldiers by parliamentary session in England as early as 1592-1593. The original act of 1592-1593 provided that the expenses of this relief was to be defrayed by local taxation of the parishes. Later laws of course extended benefits to naval and other changes occurred as the years went by.

AMERICAN COLONIAL PERIOD

The English colonies in America introduced pension systems for disabled veterans almost at the beginning of the colonization. The pilgrims enacted a law as early as 1636 at Plymouth which provided that any man sent forth as a soldier and returned maimed should be maintained completely by the colony during life. The Virginia Assembly in 1644 provided for disability and later added relief of indigent families of soldiers killed or disabled. Maryland in 1678 promised yearly pensions to disabled soldiers and to the widows and orphans of those who lost their lives in military service. In 1691 New York provided that any person who was disabled or wounded in the military service should be cured and maintained out of public revenue. By 1718 Rhode Island provided that every officer, soldier or sailor in the colony's service who was disabled should have his wounds looked after and healed at the colony's charge and should be given a pension sufficient

to maintain himself and dependent relatives. If the man was slain, his dependents were to be maintained by a yearly pension while unable to provide for themselves.²

THE NATIONAL PENSION LAWS

The pension system of the United States is said to have originally been based on the precedent and experience of the English and American Colonial governments. It is interesting to note that the Continental Congress first promised pensions to encourage enlistments in the Continental army and to prevent desertions and resignations from the army in critical times. They probably prevented the dissolution of the army and the loss of the Revolutionary War. In all these cases the administration and payments of pensions were, of necessity, left to the states, as the Continental Congress had no real executive power and no funds with which to make these payments. Congress first promised invalid pensions on 26 August 1776 to officers and men of the Continental army and navy who lost a limb or were otherwise disabled in the Revolutionary War. This invalid pension amounted to one-half pay during life or continuance of disability. Those who were not totally disabled received an adequate monthly pension not to exceed one-half of their pay. Various congressional acts enlarged the provisions for invalid pensions and extended them to those members who served in the War of 1812.³ Later legislation such as the Act of 3 May 1840 made provision for pensioning volunteers who were wounded or otherwise disabled in the service in the Mexican War. The national pension laws of the United States covering service in wars prior to 1 March 1861 were called old war pensions and for convenience may be divided into three classes: (a) invalid pensions based on wounds or injuries received, or diseases contracted in the course of duty; (b) service pensions; and (c) land grants, both granted for service irrespective of injuries.⁴

Originally the land grant warrants were part of the contract of enlistment, but later laws passed after military service was completed permitted the issue of these warrants as gratuities. Land grants were first made by the Continental Congress from 1776-1788 and the last act which granted bounty land grants was approved 3 March 18

For services rendered in the Civil War (1861-1865) in the United States Army or Navy or other various branches the Law provided two distinct systems of pensions. The general law granted pensions for wounds or injuries received or diseases contracted in service in line of duty. The pension was from \$1 to \$100 dollars per month. The other or so-called "Derivative" Act and amending act granted pensions to the families of

broad, and with certain exceptions such as entitlement to certain benefits organizational structures and administrative procedures the Veterans Administration was left free to define and develop the medical services which constituted complete medical and hospital service

FUTURE PROGRAMS

It is of course difficult to predict the future benefit and service programs for veterans. It is important that any present and future programs for disabled ex-servicemen remain flexible for flexibility will permit the addition of new programs or modification or discontinuance of existing programs as present and future requirements demand. Historians could no doubt further remind us that some commanders of armies in past wars were concerned with the emotional stability of recruits and the mental disabilities of their soldiers but it does not appear that these problems were ever of such importance as they are in modern war. Probably their importance in World War I and later conflicts is a reflection of the complexity and intensity of modern wars which involve the total manpower of nations. Mental health is now of great importance to the fighting forces and psychiatric casualties rank high in comparison with those due to epidemics and infections, which were more prominent in previous wars but are now more effectively controlled.

The objective of a program for rehabilitation of the disabled veteran may therefore not be too unlike any other program for restoration of the physically handicapped person. This type of program would consider rehabilitation of the individual to the best physical mental social and vocational usefulness of which he is capable. As was aptly stated in a recent editorial. It is all a part of the social consciousness that dawning on the world nearly 2 000 years ago became evident as a great moral force in modern life in the early part of the nineteenth century.

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UNITY, PEACE, AND CONCORD

WILLIAM OSLER M D F R S

ON THIS occasion I have had no difficulty in selecting a subject on which to address you. Surely the hour is not for the head but for the heart, out of the abundance of which I may be able to express, however feebly, my gratitude for the many kindnesses I have received from the profession of this country during the past 21 years, and from you, my dear colleagues of this state and city, during the 16 years I have dwelt among you. Truly I can say that I have lived my life in our beloved profession—perhaps too much! but whatever success I have had has come directly through it, and my devotion is only natural. Few men have had more from their colleagues than has fallen to my lot. As an untried young man my appointment at McGill College came directly through friends in the faculty who had confidence in me as a student. In the 10 happy years I lived in Montreal I saw little of my save physicians and students among whom I was satisfied to work—and to play. In Philadelphia the hospitals and the societies absorbed the greater part of my time, and I lived the peaceful life of a student with students. An ever widening circle of friends in the profession brought me into closer contact with the public but I have never departed from my ambition to be first of all a servant of my brethren, willing and anxious to do anything in my power to help them. Of my life here you all know. I have studied to be quiet and to do my own business and to walk honestly toward them that are without, and one of my chief pleasures has been to work among you as a friend, sharing actively in your manifold labors. But when to the sessions of sweet, silent thought I

The doctor who sits far well to the medical profession of the United States for 16 past years at Johns Hopkins Hospital it was 50 years ago in Baltimore 6 April 1905 at the annual meeting of the Medical and Surgical Faculty of the State of Maryland at the Hotel Eglantine where this letter to become a part of the Medical Record of the day which was first published in the *Journal of the American Medical Association* for 5 August 1905 the *Maryland Medical Journal* declared what he said concerning the motion which have led to his retirement from Johns Hopkins as a good a synthesis of what he said on his subject. He departed from Baltimore last reported. This is the first time in the history of the country that a call has come from the English University to make him an American. Every honor and every possible mark of respect and esteem the gift of his society and friends is already his and no one has been so fortunate to show that those with whom he has been in contact have predicted his greatness as a physician and the magnetic personality of wonderful man. The photographs are from the collection of the Armed Forces Medical Library—E. L. Tor

who have been zealous in the promotion of great reforms, the full value of which we are too close to the events to appreciate. On the far reaching influence of these changes time will not permit us to dwell. I propose to consider another aspect of our work of equal importance, neither scientific nor educational, but what may be called humanistic, as it deals with our mutual relations and with the public.

Nothing in life is more glaring than the contrast between possibilities and actualities, between the ideal and the real. By the ordinary mortal, idealists are regarded as vague dreamers, striving after the impossible, but in the history of the world how often have they gradually moulded to their will conditions the most adverse and hopeless! They alone furnish the *Geist* that finally animates the entire body and makes possible reforms and even revolutions. Imponderable, impalpable, more often part of the moral than of the intellectual equipment, are the subtle qualities so hard to define, yet so potent in everyday life, by which these fervent souls keep alive in us the reality of the ideal. Even in a lost cause, with aspirations utterly futile, they refuse to acknowledge defeat, and, still nursing an unconquerable hope, send up the prayer of faith in face of a scoffing world. Most characteristic of aspirations of this class is the petition of the Litany in which we pray that to the nations may be given "unity, peace, and concord." Century after century from the altars of Christendom this most beautiful of all prayers has risen from lips of men and women, from the loyal souls who have refused to recognize its hopelessness, with the war drums ever sounding in their ears. The desire for unity, the wish for peace, the longing for concord, deeply implanted in the human heart, have stirred the most powerful emotions of the race, and have been responsible for some of its noblest actions. It is but a sentiment, you may say, but is not the world ruled by feeling and by passion? What but a strong sentiment baptized this nation in blood, and what but sentiment, the deep rooted affection for country which is so firmly implanted in the hearts of all Americans, gives to these states today unity, peace, and concord? As with the nations at large, so with the nation in particular, as with people, so with individuals and as with our profession, so with its members, this fine old prayer for unity, peace, and concord, if in our hearts as well as on our lips, may help us to realize its aspirations. What some of its lessons may be to us will be the subject of my address.

UNITY

Medicine is the only world wide profession, following everywhere the same methods, actuated by the same ambitions, and pursuing the same ends. This homogeneity, its most character

istic feature is not shared by the law, and not by the Church, certainly not in the same degree. While in antiquity the law rivals medicine there is not in it that extraordinary solidarity which makes the physician at home in any country in any place where two or three sons of men are gathered together. Similar in its high aims and in the devotion of its officers the Christian Church, widespread as it is, and saturated with the humanitarian instincts of its Founder, yet lacks that catholicity—*urbis et orbis*—which enables the physician to practise the same art amid the same surroundings in every country of the earth. There is a unity, too, in its aims—the prevention of diseases by discovering their causes, and the cure and relief of sickness and suffering. In a little more than a century a united profession working in many lands has done more for the race than has ever before been accomplished by any other body of men. So great have been these gifts that we have almost lost our appreciation of them. Vaccination sanitation anaesthesia antiseptic surgery the new science of bacteriology and the new art in therapeutics have effected a revolution in our civilization to which can be compared only the extraordinary progress in the mechanical arts. Over the latter there is this supreme advantage it is domestic—a bedroom revolution which sooner or later touches each one of us if not in person in those near and dear—a revolution which for the first time in the history of poor suffering humanity brings us appreciably closer to that promised day when the former things should pass away when there should be no more unnecessary death when sorrow and crying should be no more and there should not be any more pain.

One often hears as a reproach that more has been done in the prevention than in the cure of disease. It is true but this second part of our labors has also made enormous progress. We recognize today the limitations of the art we know better the diseases curable by medicine and those which yield to exercise and fresh air we have learned to realize the intricacy of the processes of disease and have refused to deceive ourselves with half knowledge preferring to wait for the day instead of groping blindly in the dark or losing our way in the twilight. The list of diseases which we can positively cure is an ever increasing one the number of diseases the course of which we can modify favorably is a growing one the number of incurable diseases (which is large and which will probably always be large) is diminishing—so that in this second point we may feel that not only is the work already done of the greatest importance but that we are on the right path and year by year as we know disease better we shall be able to treat it more successfully. The united efforts of countless workers in many lands have won these

greatest victories of science Only by ceaseless co-operation and the intelligent appreciation by all of the results obtained in each department has the present remarkable position been reached Within a week or 10 days a great discovery in any part of the world is known everywhere, and, while in a certain sense we speak of German, French, English, and American medicine, the differences are trifling in comparison with the general similarity The special workers know each other and are familiar



The Johns Hopkins Hospital 50 years ago when Osler was "The Chief"

with each other's studies in a way that is truly remarkable And the knowledge gained by the one, or the special technic he may devise, or the instrument he may invent is at the immediate disposal of all A new lifesaving operation of the first class devised by a surgeon in Breslau would be performed here the following week A discovery in practical medicine is common property with the next issue of the weekly journals

A powerful stimulus in promoting this wide organic unity is our great international gatherings—not so much the International Congress of the profession, which has proved rather an unwieldy body, but of the special societies which are rapidly denationalizing science In nearly every civilized country medical men have united in great associations which look after their interests and promote scientific work It should be a source of special pride to American physicians to feel that the national association of this country—the American Medical Association—has become one of the largest and most influential bodies of the kind in the world We cannot be too grateful to men who have controlled its course during the past 10 years The reorganization so efficiently

carried out has necessitated a readjustment of the machinery of the state societies and it is satisfactory to know that this meeting of our state society, the first held under the new conditions has proved so satisfactory. But in the whole scheme of readjustment nothing commands our sympathy and co-operation more than the making of the county societies the materials out of which the state and national associations are built. It is not easy at first to work out such a scheme in full detail, and I would ask of the members of this body not only their co-operation but an expectant consideration if the plan at first does not work as smoothly as could be desired. On the county members I would urge the support of a plan conceived on broad national lines—on you its success depends and to you its benefits will chiefly come.

Linked together by the strong bonds of community of interests, the profession of medicine forms a remarkable world unit in the progressive evolution of which there is a fuller hope for humanity than in any other direction.

Concentration, fusion and consolidation are welding together various subunits in each nation. Much has been done, much remains to do and to three desiderata I may refer briefly.

In this country reciprocity between the state licensing boards remains one of the most urgent local needs. Given similar requirements and examinations practically of the same character, with evidence of good character, the state board should be given power to register a man on payment of the usual fee. It is preposterous to restrict in his own country, as is now done, a physician's liberty. Take a case in point. A few months ago a man who is registered in three states, an able, capable practitioner of 20 years standing, a hard student in his profession, a physician who has had charge of some of the most important lives of this country, had to undergo another examination for licence. What an anomaly! What a reflection on a united profession! I would urge you all most strongly to support the movement now in progress to place reciprocity on a proper basis. International reciprocity is another question of equal importance but surrounded with greater difficulties and though a long way off it will come within this century.

The second urgent need is a consolidation of many of our medical schools. Within the past 25 years conditions have so changed that the tax on the men in charge of the unendowed schools has become ever more burdensome. In the old days of a faculty with seven professors, a school with 300 students was a good property, paying large salaries but the introduction of laboratory and practical teaching has so increased the expenses

that very little is now left for distribution at the end of the year. The students' fees have not increased proportionately, and only the self sacrifice and devotion of men who ungrudgingly give their time, and often their means, save a hopeless situation. A fusion of the schools is the natural solution of the problem. Take a concrete example. A union of three of the medical schools of this city would enable the scientific departments to be consolidated at an enormous saving of expense and with a corresponding



111 Franklin Street

A landmark for 75 years, 'Osler' Home at the corner of Charles and Franklin Streets in Baltimore was razed soon after he moved out on 16 May 1955. An apartment now occupies the site.

increase in efficiency. Anatomy, physiology, pathology, physiologic chemistry, bacteriology, and pharmacology could be taught in separately organized departments which the funds of the united school could support liberally. Such a school could appeal to the public for aid to build and endow suitable laboratories. The clinical work could be carried on at the separate hospitals which would afford unequalled facilities for the scientific study of disease. Not only in this city but in Richmond, in Nashville, in Columbus, in Indianapolis, and in many cities a "merger" is

needed Even the larger schools of the larger cities could pool their scientific interests to the great advantage of the profession

And the third desideratum is the recognition by our homeopathic brethren that the door is open It is too late in this day of scientific medicine to prattle of such antique nonsense as is indicated in the "pathies " We have long got past the stage when any "system" can satisfy a rational practitioner long past the time when a difference of belief in the action of drugs—the most uncertain element in our art—should be allowed to separate men with the same noble traditions the same hopes the same aims and ambitions It is not as if our homeopathic brothers are asleep far from it they are awake—many of them at any rate—to the importance of the scientific study of disease, and all of them must realize the anomaly of their position It is distressing to think that so many good men live isolated, in a measure from the great body of the profession The original grievous mistake was ours—to quarrel with our brothers over infinitesimals was a most unwise and stupid thing to do That we quarrel with them now is solely on account of the old Shibboleth under which they practice Homeopathy is as inconsistent with the new medicine as is the old fashioned polypharmacy to the destruction of which it contributed so much The rent in the robe of Aesculapius wider in this country than elsewhere could be repaired by mutual concessions—on the one hand by the abandonment of special designations and on the other by an intelligent toleration of therapeutic vagaries which in all ages have beset the profession but which have been mere flies on the wheels of progress

PEACE

Many seek peace few ensue it actively and among these few we alas! are not often to be found In one sense every one of us may be asked the question which Jehu returned to Joram "What hast thou to do with peace?" since our life must be a perpetual warfare dominated by the fighting spirit The physician like the Christian has three great foes—ignorance, which is sin apathy which is the world and vice which is the devil There is a delightful Arabian proverb two lines of which run "He that knows not and knows not that he knows not is a fool Shun him He that knows not, and knows that he knows not is simple Teach him " To a large extent these two classes represent the people with whom we have to deal Teaching the simple and suffering, the fools gladly we must fight the wilful ignorance of the one and the helpless ignorance of the other not with the sword of righteous indignation but with the skillful weapons of the tongue On this ignorance the charlatan and the quack live and it is by no means an easy matter to decide how best to conduct a warfare against these wily foes

the oldest and most formidable with whom we have to deal As the incomparable Fuller remarks "Woll did the poets feign Aesculapius and Circe brother and sister, for in all times (in the opinion of the multitude) witches, old women, and impostors have had a competition with doctors " Education of the public of a much more systematic and active kind is needed The congress on quackery which is announced to take place in Paris, with some 25 subjects for discussion, indicates one important method of dealing with the problem The remarkable exhibit held last year in Germany of everything relating to quacks and charlatans did an immense good in calling attention to the the colossal nature of the evil A permanent museum of this sort might well be organized in Washington in connection with the Department of Hygiene It might be worth while to imitate our German brethren in a special national exhibit, though I dare say many of the most notorious sinners would apply for large space, not willing to miss the opportunity for a free advertisement! One effective measure is enforced in Germany any proprietary medicine sold to the public must be submitted to a government analyst who prepares a statement (as to its composition, the price of its ingredients et cetera) which is published at the cost of the owner of the supposed remedy in a certain number of the daily and weekly papers

By far the most dangerous foe we have to fight is apathy—indifference from whatever cause, not from a lack of knowledge, but from carelessness, from absorption in other pursuits, from a contempt bred of self satisfaction Fully 25 percent of the deaths in the community are due to this accursed apathy, fostering human inefficiency, and going far to counterbalance the extraordinary achievements of the past century Why should we take pride in the wonderful railway system with which enterprise and energy have traversed the land, when the supreme law, the public health, is neglected? What comfort in the thought of a people enjoying great material prosperity when we know that the primary elements of life (on which even the old Romans were our masters) are denied to them? What consolation does the "little red school house" afford when we know that a Lethean apathy allows toll to be taken of every class, from the little tots to the youths and maidens? Western civilization has been born of knowledge, of knowledge won by hard, honest sweat of body and brain, but in many of the most important relations of life we have failed to make that knowledge effective And, strange irony of life, the lesson of human efficiency is being taught us by one of the little nations of the earth, which has so far bettered our instruction that we must again turn eastward for wisdom Perhaps in a few years our civilization may be put on trial, and it will not be without benefit if it arouses the in

dividual from apathy and makes him conscious of the great truth that only by earnest individual human effort can knowledge be made effective and if it arouses communities from an apathy which permits medieval conditions to prevail without a protest.

Against our third great foe—vice in all its forms—we have to wage an incessant warfare which is not less vigorous because of the quiet silent kind. Better than any one else the physician can say the word in season to the immoral to the intemperate to the uncharitable in word and deed. Personal impurity is the evil against which we can do most good particularly to the young by showing the possibility of the pure life and the dangers of immorality. Had I time and were this the proper occasion I would like to rouse the profession to a sense of its responsibility toward the social evil—the black plague which devastates the land. I can but call your attention to an important society of which Dr. Prince Morrow of New York is the organizer which has for one of its objects the education of the public on this important question. I would urge you to join in a crusade quite as important as that in which we are engaged against tuberculosis.

CONCORD

Unity promotes concord—community of interests the same aims the same objects give if anything can a feeling of comradeship and the active co-operation of many men while it favors friction lessens the chances of misunderstanding and ill will. One of the most gratifying features of our professional life is the good feeling which prevails between the various sections of the country. I do not see how it could be otherwise. One has only to visit different parts and mingle with the men to appreciate that everywhere good work is being done everywhere an earnest desire to elevate the standard of education and everywhere the same self-sacrificing devotion on the part of the general practitioner. Men will tell you that commercialism is rife that the charlatan and the humbug were never so much in evidence and that in our ethical standards there has been a steady decline. These are the Elijahs who are always ready to pour out their complaints mourning that they are not better than their fathers. Few men have had more favorable opportunities than I have had to gauge the actual conditions in professional private life in the schools and in the medical societies and as I have seen them in the past 20 years I am filled with thankfulness for the present and with hope for the future. The little rift within the lute is the absence in many places of that cordial professional harmony which should exist among us. In the larger cities professional jealousies are doing

out Read Charles Caldwell's *Autobiography* if you wish for spicy details of the quarrels of the doctors in this country during the first half of the last century. I am sorry to say the professors have often been the worst offenders, and the rivalry between medical schools has not always been friendly and courteous. That it still prevails to some extent must be acknowledged, but it is dying out, though not so rapidly as we could wish. It makes a very bad impression on the public, and is often a serious stumbling block in the way of progress. Only the other day I had a letter from an intelligent and appreciative layman who is interested in a large hospital scheme about which I had been consulted. I quote this sentence from it in sorrow, and I do so because it is written by a strong personal friend of the profession, a man who has had long and varied experience with us. "I may say to you that one of the distressing bewilderingments of the layman who only desires the working out of a broad plan is the extraordinary bitterness of professional jealousy between not only schoolmen and nonschoolmen, but between schoolmen themselves, and the reflections which are cast on one another as belonging to that clique, which makes it exceedingly difficult for the layman to understand what way there is out of these squabbles."

The national and special societies, and particularly the American Medical Association, have brought men together and have taught them to know each other and to appreciate the good points which at home may have been overlooked. As Dr. Brush said yesterday in his address, it is in the smaller towns and country districts that the conditions are most favorable for mutual misunderstandings. Only those of us who have been brought up in such surroundings can appreciate how hard it is for physicians to keep on good terms with each other. The practice of medicine calls equally for the exercise of the heart and the head, and when a man has done his best, to have his motives misunderstood and his conduct of a case harshly criticized not only by the family, but by a colleague who has been called in, small wonder, when the opportunity arises, if the old Adam prevails and he pays in kind. So far as my observation goes there are three chief causes for the quarrels of doctors. The first is lack of proper friendly intercourse, by which alone we can know each other. It is the duty of the older man to look on the younger one who settles near him not as a rival, but as a son. He will do to you just what you did to the old practitioner, when, as a young man, you started—get a good many of your cases, but if you have the sense to realize that this is inevitable, unavoidable and the way of the world, and if you have the sense to talk over, in a friendly way, the first delicate situation that

orises, the difficulties will disappear and recurrences may be made impossible. The young men should be tender with the sensibilities of their seniors, deferring to their judgment and taking counsel with them. If young graduates could be taken more frequently as assistants or partners, the work of the profession would be much lightened and it would promote amity and good fellowship. A man of whom you may have heard as the incarnation of unprofessional conduct, and who has been held up as an example of all that is pernicious, may be in reality a very good fellow, the victim of petty jealousies, the mark of the arrows of a rival faction, and you may, on acquaintance, find that he loves his wife and is devoted to his children, and that there are people who respect and esteem him. After all, the attitude of mind is the all important factor in the promotion of concord. When a man is praised or when a young man has done a good bit of work in your special branch, be thankful—it is for the common good. Envy, that pain of the soul as Plato calls it, should never for a moment afflict a man of generous instincts who has a sane outlook in life. The men of rival schools should deliberately cultivate the acquaintance of each other and encourage their students and the junior teachers to fraternize. If you hear that a young fellow just starting has made mistakes or is a little "off color," go out of your way to say a good word to him, or for him. It is the only cure; any other treatment only aggravates the malady.

The second great cause is one over which we have direct control. The most widespread, the most pernicious of all vices, equal in its disastrous effects to impurity, much more disastrous often than intemperance, because destructive of all mental and moral nobility as are the others of bodily health, is uncharitableness—the most prevalent of modern sins, peculiarly apt to beset all of us, and the chief enemy to concord in our ranks. Often times it is a thoughtless evil, a sort of tic or trick, an unconscious habit of mind and tongue which gradually takes possession of us. No sooner is a man's name mentioned than something slighting is said of him, or a story is repeated which is to his disadvantage, or the involuntary plight of a brother is ridiculed, or even his character is traduced. In chronic and malign offenders literally, with every word a reputation dies. The work of a school is disparaged, or the character of the work in a laboratory is belittled, or it may be only the faint praise that damns not the generous meed from a full and thankful heart. We have lost our fine sense of the tragic element in this vice, and of its debasing influence on the character. It is interesting that Christ and the Apostles lashed it more unsparingly than any other. Who is there among us who does not require every day

to lay to heart that counsel of perfection "Judge not according to the appearance, but judge righteous judgment?" One of the apostles of our profession, Sir Thomas Browne, has a great thought on the question

While thou so hotly disclaimest the devil, be not guilty of diabolism Fall not into one name with that unclean spirit nor act his nature whom thou so much abhorrest—that is to accuse calumniate backbite whisper detract or sinuously interpret others Degenerous depravities and narrow minded vices! not only below St Paul's noble Christian but Aristotle's true gentleman Trust not with some that the Epistle of St James is apocryphal and so read with less fear that stabbing truth that in company with this vice thy religion is in vain Moses broke the tables without breaking the law but where charity is broke the law itself is shattered which cannot be whole without love which is the fulfilling of it Look humbly upon thy virtues and though thou art rich in some yet think thyself poor and naked without that crowning grace which thinketh no evil which envieth not which heareth, hopeth believeth endureth all things With these sure graces while busy tongues are crying out for a drop of cold water mures may be in happiness and sing the Trisagion in heaven

And the third cause is the wagging tongue of others who are too often ready to tell tales and make trouble between physicians There is only one safe rule—never listen to a patient who begins with a story about the carelessness and inefficiency of Dr Blank. Shut him or her up with a snap knowing full well that the same tale may be told of you a few months later Fully half of the quarrels of physicians are fomented by the tittle-tattle of patients, and the only safeguard is not to listen. Sometimes it is impossible to check the flow of imprecation and slander and then apply the other rule—perfectly safe and one which may be commended as a good practice—never believe what a patient tells you to the detriment of a brother physician, even though you may think it to be true

To part from the profession of this country and from this old Faculty, which I have learned to love so dearly, is a great wrench one which I would feel more deeply were it not for the nearness of England, and for the confidence I feel that I am but going to work in another part of the same vineyard, and were it not for the hope that I shall continue to take interest in your affairs and in the welfare of the medical school to which I owe so much It may be that in the hurry and hustle of a busy life I have given offence to some—who can avoid it? Unwittingly I may have shot an arrow over the house and hurt a brother—if

so I am sorry and I ask his pardon. So far as I can read my heart I leave you in charity with all. I have striven with none, not as Walter Savage Landor says because none was worth the strife, but because I have had a deep conviction of the hatefulness of strife of its uselessness of its disastrous effects and a still deeper conviction of the blessings that come with unity, peace, and concord. And I would give to each of you, my brothers—you who hear me now, and to you who may elsewhere read my words—to you who do our greatest work laboring incessantly for small rewards in towns and country places—to you the more favored ones who have special fields of work—to you teachers and professors and scientific workers—to one and all, through the length and breadth of the land—I give a single word as my parting commandment.

It is not hidden from thee neither is it far off. It is not in heaven that thou shouldest say: 'Who shall go up for us to heaven and bring it unto us that we may hear it and do it?' Neither is it beyond the sea that thou shouldest say:

'Who shall go over the sea for us and bring it unto us that we may hear it and do it?' But the word is very nigh unto thee in thy mouth and in thy heart that thou mayest do it.

—CHARITY

FEAR IS CAUSED BY LACK OF KNOWLEDGE

The usual excuse or reason for not telling the patient when a diagnosis of cancer has been made is that the relatives, the physician or both consider the shock too great for the patient to take. In other words the patient is considered mentally incompetent to receive the diagnosis. If that is true let us consider the morbidity and mortality of coronary occlusion. Coronary heart disease is common and is well known to the public of today. It strikes suddenly. If the individual is so fortunate as to survive the initial attack he lives under the constant threat of another occlusion, maybe fatal. Yet do the family and the doctor hesitate to tell him the truth? And when told does the patient go into some terrible mental collapse? No, he doesn't because heart disease is common and people are familiar with it. Nowadays cancer has become well known to the public through education and the blind fear of the word cancer has been dispelled. Fear is caused by lack of knowledge.

—F. G. H. MALONEY, M. D.

1. *Wisc. onst. Medical J. mal*

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Clinicopathologic Conference

U S Naval Hospital Chelsea Mass *

EPISTAXIS FEVER AND CHEST PAIN

Summary of Clinical History A 57 year old man was admitted to the hospital complaining of pain in the right side of his chest.

Five weeks before admission he noted the gradual onset of difficulty in breathing and of associated fleeting pain across the chest and in the shoulders. The pain became steady and persisted over the lower right side of the chest. Both wrists became sore but residual soreness and swelling involved only the right wrist. Four weeks before admission he developed anorexia, "gas pains," and a "flutter" in the upper part of the abdomen. Ten days before admission there was a sudden exacerbation of right-sided chest pain. It was sharp and made worse by deep breathing and coughing. A roentgenogram of the chest taken at another hospital showed blunting of the costophrenic angles due to old adhesions. Seven days before admission he began to cough and raised tenacious, mucoid sputum which was often blood streaked. There was associated weakness, malaise, chills, and temperature elevations as high as 101 F.

The past history revealed that upon retirement at the age of 50 he had had no significant physical defects. Five years before this admission he had had an attack of psoriasis. Nine months before admission, following excessive yuletide celebrations, he was admitted to another hospital with complaints of anorexia, insomnia, and a generalized dermatitis. He was given parenteral feedings, vitamins, and paraldehyde sedation, then transferred to a second hospital where the diagnosis of pellagra was made and vitamin therapy increased. His weight was usually 178 pounds but had fallen to 146 pounds. After discharge, he continued on a diet with supplementary vitamins, and felt improved. He had had occasional nosebleeds and chronic atrophic rhinitis. About three weeks before admission, however, he began to have epistaxis more frequently. There were no cardiac manifestations.

Capt. Carl W. Stelle (MC) USN Commanding Officer From the Laboratory
Servic. Lt. Henry R. Delaney Jr. (MC) USN Chief

He had no food intolerance and had never had black stools. His alcohol intake had probably been excessive.

Physical Examination. On admission the patient weighed 155 pounds and appeared poorly nourished and acutely ill. There were bright red conjunctival hemorrhage and bilateral arcus senilis. The ears contained dark crusted blood. No lymph nodes were palpable. There was a pleural friction rub over the right anterolateral region of the chest and a pericardial friction rub was heard along the left sternal border. There were a few fine moist rales at both lung bases and a small area of bronchovesicular breathing posteriorly over the right upper lobe. The heart was not enlarged and no murmurs were heard. The abdomen was somewhat distended but no masses were palpable. On the skin about the ankle there was a crusted scaling erythematous eruption. The right wrist was slightly swollen and tender. The remainder of the examination was within normal limits.

The temperature was 99.6 F, respiration 24 pulses 116 and the blood pressure 160 mm Hg systolic and 76 mm Hg diastolic.

Laboratory Studies. Repeated urinalyses revealed acid reactions, specific gravity of 1.003 to 1.012, albumin 20 to 60 mg per 100 ml and no sugar. The sediments contained three to five white blood cells, a few epithelial cells and amorphous crystals of high power field. The hemoglobin was 12.5 grams per 100 ml and the white blood cell count was 15,400 per cu mm with 6 per cent neutrophils, 16 per cent lymphocytes and one percent eosinophil. The serum bilirubin was 0.5 mg, the nonprotein nitrogen 80.6 mg and creatinine 6.6 mg all per 100 ml. Prothrombin activity was 67 per cent of normal, total protein was 0 (albumin 0, globulin 2.0) grams per 100 ml.

On the third hospital day a sputum culture contained Friedlander's bacilli and the white blood cell count rose to 21,900 per cu mm. Repeated smears for acid fast bacilli were negative. The hemoglobin level had fallen to 9.5 grams per 100 ml. On the fourth hospital day the blood urea nitrogen was 120.0 mg per 100 ml. An initial roentgenogram of the chest was interpreted as showing essentially clear lungs, blunting of the right costophrenic angle by thickened pleura and slight elevation of the right diaphragm. The heart was not enlarged. Roentgenogram of the chest two days later, however, revealed mottling in the right upper lobe and haziness in the left lung and at the left lung base. Electrocardiograms showed sinus tachycardia and first degree A-V block with a P-R interval of 0.22 second at a cardiac rate of 115 per minute. There was elevation of the S-T segment in leads V₁, V₂ and V₃. There was relatively low voltage in the standard lead.

Course in Hospital During the first two hospital days the patient continued to cough up moderate amounts of tenacious, mucoid, bloody sputum. The pleural and pericardial friction rubs persisted. The right-sided chest pain decreased in severity following the isolation of Friedlander's bacilli, medication was changed from 250 mg of tetracycline every six hours, to one gram of streptomycin twice daily. Though his temperature never rose above 100 F and he had no chills, his condition deteriorated rapidly. On the sixth hospital day he became agitated and mentally clouded. The intake of food and fluids was difficult to control. On the eighth hospital day he was disoriented and much weaker. He died quietly without a dramatic change in the clinical course.

DISCUSSION

Doctor Shofan In summary this was a 57 year old man with a five week history of a pleuritic type of pain, epistaxis, swelling of the wrist and a seven-day history of low grade fever with cough productive of mucoid and blood streaked sputum. The physical findings were those of an acutely ill man with a temperature of 99.6° F, a right pleural friction rub, a pericardial friction rub, swelling and tenderness of the right wrist and skin lesions on both legs. The urine showed a specific gravity that was fixed, albuminuria and several white blood cells per high power field. He had a mild anemia, leukocytosis and a progressive rise in his blood urea nitrogen. The sputum culture contained Friedlander's bacilli, the roentgenogram of the chest was initially negative except for blunting of the right costophrenic angle. Two days later another chest film revealed mottling in the right upper lobe and haziness in the left lung base. An electrocardiogram showed P-R interval prolongation and S-T segment elevation of the leads on the left side of the precordium. The patient's course was downhill and he died on the eighth hospital day, five days after treatment with streptomycin was instituted. Could we see his x-ray films now?

Doctor Hatch The initial chest film shows clear lung fields and a normal cardiac contour. There is some apparent pleural thickening in the right costophrenic angle. The film taken two days later, however, shows a mottled density in the right upper lobe.

Doctor Shofan Is there any fluid?

Dr. Hatch I don't believe so.

Doctor Shofan It appeared that this patient died with a Friedlander's pneumonia, however, this was probably just the terminal complication of a more chronic illness. Herein lies the problem as to the differential diagnosis of this bizarre syndrome. Apparently this patient had a dis-

Lt. (jg) M. E. Shafran (MC) USNR, Ward Officer, Medical Service
Capt. J. H. L. Hatch (MC) USN, Chief of Radiology

case one of whose prime manifestations was that of renal insufficiency. We have sufficient evidence to say that this man died in uremia with rising blood urea nitrogen, fixed specific gravity, clouded sediment, friction rubs, and anemia. It would be of interest to know what this patient's urine output was during his hospitalization.

Dr. D. L. : During the last two days his urine output ranged from 600 to 400 cc per day.

Dr. Sh. : Of interest was the fact that he was relatively normotensive. His diastolic pressure was recorded as 76 mm Hg. He had no red blood cells nor casts in his urine. What could produce his uremia? There was no evidence of any obstructive uropathy. We can assume that when this man was separated from the service seven years ago he had neither hypertension nor any urinary abnormalities. It would be of some importance to know whether there were any urinary abnormalities suspected on his admission to a hospital nine months prior to his present admission. I will make the assumption that his urinalysis and blood urea nitrogen were normal then. If this is the case it would be somewhat unusual for this man to have either chronic glomerulonephritis or pyelonephritis as the cause of his uremia because the duration of his illness would then be uncommonly short. He did not give a history referable to any disease of the urinary tract in the intervening months. He died in uremia with nothing to suggest an acute nephritis. It would also be somewhat unusual for him to be normotensive in the uremic stage of either chronic glomerulonephritis or pyelonephritis. Absence of red blood cells in his urine is also against this being an acute glomerulonephritis. We have no reason to suspect an acute tubular necrosis or lower nephron nephrosis. We are left then to consider some of the rarer causes of uremia.

Could this man have had renal tuberculosis? Tuberculosis can account for the pneumonitis, pleuritis, pericarditis, myocarditis, nephritis, and bone involvement simulating arthritis. However, this would be a most unusual course for tuberculosis to follow. His lungs were clear when he first entered the hospital except for the blunting of the right costophrenic angle. The pneumonitis appeared only after the fatal syndrome had evolved. The pleural thickening may represent an old tuberculous pleuritis but is probably not related to this present illness. Pleural effusions and pericarditis usually indicate a marked hyperergic response to tuberculous infection. This occurs but is unusual in a man of this age. Tuberculous pericarditis is often associated with tuberculous mediastinal nodes which were not seen here. Bone and renal tuberculosis are usually secondary to hematogenous dissemination of tubercle bacilli for which we have little evidence here in the absence of miliary lesions in the lungs and hepatosplenomegaly. Renal tuberculosis often occurs many years after the hematogenous dissemination and not concomitantly with a tuberculous pneumonitis and bone disease. I don't believe he had tuberculosis.

Because of the multiplicity of organ systems involved I am forced to look toward the diffuse collagen disorders for his diagnosis. Polyarteritis nodosa could account for his uremia, arthritis, pleuritis, pericarditis, low grade fever, epistaxis, and electrocardiographic changes. However, the normotension, the absence of eosinophilia, the absence of neurologic changes, and the absence of asthma, nodules, and lymphadenitis are all somewhat against this diagnosis. Lupus erythematosus disseminatus should be given a good deal of consideration. Pulmonary infiltrations are not uncommon manifestations of lupus. In fact, these patients have an unusual susceptibility to pneumonias. Pneumonias were found in 15 of 22 patients reported by Israel.¹ Of these 22 patients, 20 had some pulmonary involvement, either a pneumonitis or pleural effusion. The pneumonitis was either viral or bacterial in origin and generally speaking did not show the typical collagen disorder changes that are described with lupus erythematosus. There was no perivascular infiltration as such. With lupus erythematosus we could explain the pericarditis, the pleuritis, the arthritis, and the nephritis.

A diagnosis of pellagra was made nine months prior to his present admission. That was presumably made on the basis of a generalized dermatitis and a history of alcoholic excesses. Traut² in his book on rheumatic diseases mentions pellagra in the differential diagnosis of lupus erythematosus. Doctor Cox, do you believe that the skin lesions of these two diseases could be confused?

Doctor Cox: I don't believe they could dermatologically.

Doctor Shafran: It isn't uncommon for patients with lupus erythematosus disseminatus to remain normotensive in the uremic stage of their disease. They commonly die of intercurrent infection. There are a number of features that are somewhat against this diagnosis, however. The disease is predominantly one of young females. The often quoted ratio is that of 95 females to five males. I haven't seen a hundred patients with lupus—I have seen maybe a half dozen, but of these three were males. I don't know whether I'm just getting a distorted picture, but it seems that the quoted ratio is somewhat exaggerated.

Neutropenia is characteristic of disseminating lupus. However, these patients can respond to infections with a leukocytosis. Three of Israel's patients had a frank leukocytosis of over 15,000 per cu. mm, and seven of the other 22 patients he reported had white blood cell counts from 8,000 to 11,000. There are a number of other features that are also against lupus. With his renal disease, there is no report of hematuria. He had no heart murmurs, and usually the serum globulins are elevated. Was a lupus erythematosus (L.E.) preparation made to try to demonstrate changes in his neutrophils after incubation with his own serum?

Comd. J. B. H. Cox (MC) USA, Chief of Dermatology

Dr. D. I. y. No lupus erythematosus preparations were not made.

Dr. Sh. f. n. There are other diagnostic possibilities that I will reserve for last because they fail to explain the whole picture. A pulmonary infarct is not unlikely. In this age group probably the most common cause of chest pain, friction rub, and hemoptysis is pulmonary infarction. Somewhat against this diagnosis is the fact that a lesion found on roentgenography, although suggestive of a pulmonary infarct, failed to evolve. Also, he didn't have most of the predisposing factors for pulmonary infarction that you might expect.

Rheumatic fever could cause the epistaxis, joint swelling, tachycardia, prolonged P-R interval, pericardial rub, and skin lesions. However, I find it rather difficult to make such a diagnosis in a man 57 years of age, nor could I readily explain the involvement of only one joint, the normal size of his heart, and his renal disease. With a history of psoriasis and the presence of a swollen, tender wrist, one might also think of rheumatoid arthritis. The possibility exists, but I don't think it is a very important one in this case.

The patient had a history of heavy alcoholic intake and an underlying debilitating disease. Both factors predispose him to a terminal Friedlander's pneumonia. There are several features of this type of pneumonia which this patient presented. Such patients tend to run a low-grade fever, usually not higher than 101° F., which is low when contrasted with pneumococcus pneumonia. There is usually marked prostration, and the sputum is tenacious, mucoid, and tends to stick to the sides of the cup. The sputum may be copious, but it also may be raised with such difficulty that it is scant. Blood streaking of the sputum is quite common, but is usually homogeneously mixed, giving the sputum a brick-red color. Pleural effusions, empyema, and pericarditis can occur with Friedlander's pneumonia. Radiologically, the lesions occur more often in the upper lobes. Generally, these lobes appear much denser on x-ray and are often described as appearing to be very heavy. On x-ray, you occasionally see a sagging, interlobar fissure, looking as though it is being weighted down. There is a tendency for it to cavitate because necrosis is one of the distinguishing features of Friedlander's pneumonia. Bacteremia was probably present here. Blood cultures of Friedlander's bacilli have been obtained in as many as 50 percent of the patients. It is possible that the original cause of the right pleuritic pain with shoulder radiation was due to a subphrenic abscess. Doctor Hatch, was that right diaphragm significantly elevated?

Dr. Hatch: Not really, and it is normally higher on the right than the left.

Dr. Sh. f. n. With a five-week history of right-sided chest pain and few findings on his chest x-ray at the time of admission, one must consider a subphrenic abscess on the right, possibly due to Friedlander's bacillus. The origin would be somewhere in the gastrointestinal

nal tract possibly an old perforation of the appendix or colon I believe that it is most likely that the Friedländer's pneumonia was not primary in the lung but was the result of a Friedländer's bacteremia. According to Baehr and associates,³ primary infections of the lung with Friedländer's bacillus are rare. They are usually secondary to bacteremia. Friedländer's bacillus is present in the feces in about five percent of normal persons and are also a part of the normal flora of the upper respiratory tract.

I now find myself in the difficult position of having to decide on the cause of this man's illness. The disease appeared to be widespread involving many organ systems. I think this man had a diffuse collagen disease. There are features of both polyarteritis nodosa and lupus erythematosus. I prefer to think he had lupus erythematosus disseminatus which was terminally complicated by a Friedländer's bacteremia and pneumonia.

Dr. Shofron's diagnoses

- 1 Acute disseminated lupus erythematosus
- 2 Friedländer's pneumonia

Doctor Haynes: When I first saw the patient I was impressed by the multiple joint involvement and thought he had a polyserositis.

Doctor Hirsch: Was a fundoscopic examination done? The low urinary specific gravity, uremia and blood pressure of 160 suggest that he had contracted kidneys. Nosebleeds are very commonly seen with this condition.

Doctor Delaney: The fundi were not visualized by ophthalmologist.

Doctor Nichols: Bright red conjunctival hemorrhages were seen. Were there any petechiae or hemorrhagic manifestations elsewhere?

Doctor Delaney: None are noted in his chart.

Doctor Stelle: Do you think there is any relationship between his alcohol intake and the fatal illness?

Doctor Shofron: I know of no relationship of alcoholism to collagen disease. However, his terminal Friedländer's pneumonia might have been related to his alcohol intake. There is a higher incidence of Friedländer's pneumonia in alcoholics though it is also seen with any severe debilitating disease.

Doctor Jones: Was a definite diagnosis made on this patient's erythematous eruption?

Commander Lewis L. Haynes (MC) USA, Chief of Surgery
 Doctor Hirsch: Consultant in Otolaryngology
 Captain L. C. Nichols (MC) USA, Chief of Neuropsychiatry
 Captain William J. Jones (MC) USA, Chief of Neurosurgery

Doctor Shafran: I don't know. I assumed that this was probably residual psoriasis.

Doctor Vilk: The thinking of the staff on the ward was influenced by the history of alcoholism that was obtained. On a previous admission to another hospital pellagra was diagnosed. The hemorrhagic areas on the scapula, the hemoptysis and epistaxis were thought to be due to a vitamin deficiency possibly scurvy. He did not have a definite diagnosis for the skin eruption.

Doctor C: According to the description given in the protocol the skin lesions were nonspecific and could be pellagra, a bacterial dermatitis, et cetera.

Doctor Hey: I thought the skin changes were just a common stasis dermatitis around the ankles associated with small varicose veins.

Doctor K: Was the urine repeatedly negative for sugar?

Doctor D: Yes.

Doctor Siler: One must also add subacute bacterial endocarditis and amyloidosis to the differential diagnosis of a patient with uremia and a normal blood pressure. There were no indications that either of these diseases was present here. One almost never sees subacute bacterial endocarditis in the absence of cardiac murmurs. Amyloidosis is usually accompanied by hepatosplenomegaly and some elevation of serum globulin. I congratulate Doctor Shafran on his very thorough and very interesting discussion.

Clinical diagnoses

1. Friedlander's pneumonia
2. Laennec's cirrhosis with multiple vitamin deficiency
3. Uremia cause undetermined

PATHOLOGIC DISCUSSION

Doctor D: The pathologic findings confirm Doctor Shafran's diagnoses. The major findings were in heart, kidneys, and lungs.

The heart weighed 400 grams and was within normal limits, but there was a thick fibrinous pericarditis and 30 cc. of clear pericardial effusion. Gross vegetations were not seen on the heart valves but microscopically the mitral leaflets and the aortic cusps showed small verrucous lesions. These excrescences were present on both surfaces of the mitral leaflets and on the superior surface of one of the aortic cusps. They were elevated, often covered by endothelium and consisted of swelling of the collagenous connective tissue with fibrinoid degeneration and some inflammatory-cell infiltration. One of the lesions on the aortic cusp was ulcerated and covered by an irregular mass of

Comd. Ralph Vilk (MC) USN. Assistant Chief of Medical

Commander Milton Kurk (MC) USN. Chief of Pathology

Dr. Herbert S. Saxe. Consultant Medical

fibrinoid material. Within the verrucous lesions on the mitral valve there were degenerative changes of the inflammatory cells and deeply staining ovoid bodies resembling the so called hematoxylin bodies seen frequently in lupus erythematosus disseminatus. The myocardium had small perivascular areas of fibrinoid degeneration and inflammatory cell infiltration but this was an extension of the reaction in the pericardium.



Figure 1 Photomicrograph of a glomerulus showing thrombosis of the capillaries of the lower tuft with early necrosis. Excessive cellularity is apparent (Hematoxylin and eosin stain, $\times 350$)

The kidneys were greatly enlarged each weighing 310 grams and the cortices were swollen smooth dark red and covered with petechiae. The corticomedullary differentiation was indistinct and there were petechiae in the medulla. Microscopically the various lesions commonly seen in acute disseminated lupus erythematosus were found (figs 1 and 2). Most prominent among these in this patient was a proliferative glomerulitis. There was proliferation of the capillary endothelium and of the capsular epithelium leading to complete obliteration of many of Bowman's capsules and of many glomerular capillaries. There were some of the typical "wire loop" glomerular capillaries but this was not a prominent feature. Within many of the capillary tufts there were fibrin thrombi which had resulted in necrosis of portions of the glomerular tufts. Though this resembled a somewhat similar and closely related disease disseminated platelet thrombosis

I believe that this can be excluded by the presence of some of the other components in this man's illness. These thrombi within the glomerular capillaries did not appear to be embolic because of their distribution and their absence within other organs.

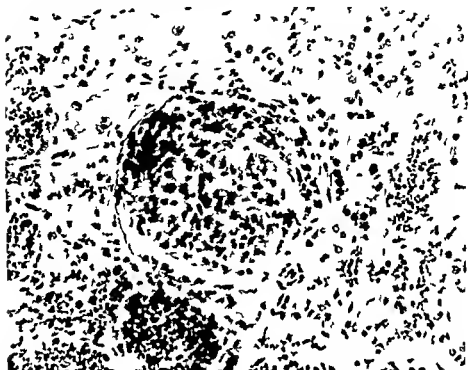


Fig. 2. Thrombi and actual hemorrhage within the glomerulus. The center of the field shows a glomerulus with incomplete basement membrane of Bowman's capsule (H&E stain, $\times 350$).

The lungs showed an organizing and hemorrhagic pneumonia consistent with Friedlander's pneumonia and uremia. The lungs were heavy and covered by fibrin from the pleural effusions. The right lung weighed 1,300 grams and the left 1,050 grams. There were numerous hemorrhagic consolidations within which were small cystic areas. These are sometimes seen with Friedlander's pneumonia. There is no specific pulmonary picture for acute disseminated lupus erythematosus although it has been pointed out by many that a hemorrhagic interstitial pneumonitis is often seen with it.

The spleen weighed 190 grams and was covered with fibrin. There were irregular, firm, yellow infarcts which varied from a few millimeters to a few centimeters in size. Microscopically the infarcts appeared to be several weeks old. Within some of the central arterioles there were organizing thrombi. These infarcts may have resulted from emboli from the heart valves. The feature which is often mentioned in

the description of acute lupus erythematosus disseminatus in the spleen the periarterial fibrosis was not prominent in this patient but was present to a moderate degree

The liver was congested but otherwise normal There was nothing to suggest a focus of Friedlander's infection outside the lungs

Pathologic diagnoses

- 1 Acute disseminated lupus erythematosus
- 2 Friedlander's pneumonia, resolving

Dr Meisner Not every case of lupus erythematosus shows such a good correlation between clinical and pathologic features as in this instance While some of the typical findings of disseminated lupus erythematosus are absent in this case there are many instances where in spite of the characteristic clinical course the pathologic changes are minimal or difficult to find It is only by the histologic examination of numerous patients that one can see the entire range of possible pathologic manifestations in this disease

The diagnosis of Friedlander's pneumonia in this case made clinically is of interest The relative frequency of this type of pneumonia as compared to other specified types of pneumonia is increasing now that pneumococcus pneumonia has been brought under control by chemotherapy In many laboratories Friedlander's pneumonia is found at autopsy to be more common than pneumococcus pneumonia The diagnosis is made more often by the pathologist than by the clinician

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Headache only rarely indicates a serious condition inside the skull but because of this possibility and the fact that the different varieties of headache often have not been clearly distinguished many physicians have avoided attempts to relieve this complaint if more is required than analgesic medication This attitude is unfortunate because differentiation of the various types of headache is usually easy and symptomatic relief can often be obtained by simple methods readily applicable in the office

—HENRY L WILLIAMS M D
in *Illinois Medical Journal*
p 53 Feb. 1954

Treatment of Aphthous Stomatitis With Aureomycin Mouthwash

ALEXIS ASTAFF *Capt. n, DC, USA*

APHTHA the so-called canker sore is a painful condition which may occur singly or scattered throughout the mouth healing usually requires from seven to 10 days. The lesions have been treated topically by application of such drugs as diluted Talbot's solution (iodine and zinc iodide glycerite) phenol tri-chloroacetic acid camphor spirit, and the use of aureomycin mouth wash and ointment. Patients with aphthae have also been treated systemically by administering vitamin B complex thiamine hydrochloride vitamin C radiation therapy vaccination with smallpox vaccine aureomycin and oxytetracycline (terramycin) -

The cause of aphthous ulcers is still questionable. Some believe they are due to the herpes virus or that they are precursors of herpetic gingivostomatitis. Other predisposing factors may be an allergy gastrointestinal disturbances hormonal unbalance and psychosomatic factors.

Twelve patients who had one to six aphthae scattered on the mucous membrane of the oral cavity were selected. The ulcers were in various stages of the disease and only one patient had generalized gingivostomatitis. Body temperature of each patient was normal. Two ounces of aureomycin suspension containing 125 mg of aureomycin per teaspoonful was prescribed for each patient who was instructed to dilute this suspension equally with hot water and to rinse the mouth three times a day with it. The mouth was rinsed for 30 seconds around the area or areas of the aphthae then the patient expectorated the solution.

Twenty four hours after commencing treatment patients had no noticeable pain. The lesion was still present but was not painful to pressure. After seven days most of the aphthae had disappeared and the mouthwash was discontinued. The patient with gingivostomatitis however developed cheilitis and a more pronounced generalized soreness of the tongue and mouth after 24-hour use of the aureomycin mouthwash and this was then immediately discontinued.

The patient who presented acute symptoms after using the aureomycin suspension was possibly allergic to the suspension. As

yet it has not been established whether the aureomycin is effective directly against the herpetic virus or acts on the secondary bacterial invaders. Clinically, it appears the latter effect was responsible for the prompt relief of pain. This simple procedure is advocated for rapid relief of pain in aphthae sufferers.

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VOGUES IN PSYCHIATRIC TREATMENT

This enthusiasm for the new is an old pattern in medicine and especially through the years has it been applied to the ills of mankind for which least specific remedies have been available. In no branch of medicine have there been more varied and enthusiastically accepted but short-lived and unproven therapies than for the common emotional symptoms of stress. Fifty years ago trephining was in great vogue in the leading medical clinics as accepted treatment for all emotional disturbance. We are but a few years away from the rather wholesale removal of teeth, tonsils, and prostate as well as long sections of the gastro-intestinal tract in a vain attempt to remove microscopic foci of infection and prevent auto-intoxication as a routine treatment of schizophrenia. The preliminary reports on those methods of treatment were as encouraging and optimistic as ones we are encountering today.

—JOHN P. BELL, M.D.

in Journal of the Kentucky State

Medical Association, p. 788, Oct. 1954.

Recovery of Salmonella From Contaminated Cultures

JAMES INO M S

CHARLES D GRABER Maj MSC, USA

ISOLATION of salmonella from cultures contaminated with pseudomonas organisms is difficult if not impossible using the usual plating technics. Inhibitory agents such as 0.1 per cent sodium azide¹ and 0.2 percent chloral hydrate² commonly used for reducing the number of proteus bacteria in clostridial cultures are ineffectual because they also hinder salmonella growth. Likewise the use of an antibiotic such as polymyxin fails because it is equally bactericidal for pseudomonas and salmonella.³

Although members of the family pseudomonadaceae are often motile salmonella are much more so and this fact has been used on several occasions to recover the latter from a mixed culture. A modification of the method of Craigie⁴ for phase isolation in salmonella was used for this purpose by inoculating the mixed culture in one end of the tube (fig. 1) and allowing the two organisms to migrate through the semisolid media. A telltale wake of hydrogen sulfide was observed tracing the growth of salmonella as it outdistanced the pseudomonas. By this method isolation and identification of salmonella in from three to four days was possible.

Five salmonella stock cultures *S. newport*, *S. typhimurium*, *S. paratyphi B*, *S. typhosa* and *S. newington* were combined with three *Pseudomonas aeruginosa* strains isolated from body fluids of patients in this hospital. A total of 15 combinations effected in this manner were inoculated to Kligler iron agar and then subsequently subcultured to a U tube containing semisolid medium (Simmons Difco). In 24 hours it was possible to isolate a pure culture of the salmonella species from each of the 15 cultures at the opposite end of the U tube by streaking a salmonella shigella plate.

The use of U tube affords a fast, simple and effective method for separating salmonella from pseudomonas based on the fact

that salmonella are almost always more actively motile than the pseudomonas organisms

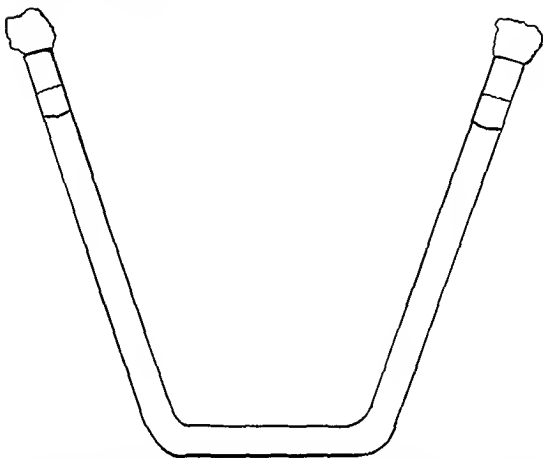


Figure 1 The tube made of one-quarter inch glass tubing seven inches long is filled with semisolid medium through which the desired organism migrates. Sterile cotton in the ends prevents contamination.

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ADMIRAL HOGAN SUCCEEDS ADMIRAL PUGH, BECOMES 22d SURGEON GENERAL OF NAVY

Rear Admiral Bartholomew W Hogan became the twenty second Surgeon General of the Navy on 15 February 1955 succeeding Rear Admiral Lamont Pugh who has held this high position for the past four years. Admiral Hogan is also the twenty sixth Chief of the Navy's Bureau of Medicine and Surgery.



Left to right: Rear Admiral Bartholomew W. Hogan, 22d Surgeon General of the Navy, and Rear Admiral Lamont Pugh, 21d Surgeon General of the Navy, with Judge Advocate General of the Navy Thomas S. Glete.

Admiral Hogan was born in West Quincy, Mass., in 1901. In 1925 he received the degree of doctor of medicine from Tufts College Medical School and was awarded the Phi Lambda Kappa Medal for highest achievement. Upon graduation he was appointed a lieutenant junior grade in the Medical Corps of the Navy and rose through the ranks to rear admiral. For heroic service during World War II he was awarded the Silver Star Medal and later the Navy and Marine Corps Medal and the Purple Heart Medal.

He has served in succession as commanding officer of the Naval Medical School and of the Naval Hospital, National Naval Medical Center. A Fellow of the American College of Physicians and the American Psychiatric Association, he was appointed Deputy Surgeon General and Assistant Chief of the Bureau of Medicine and Surgery in 1954.

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Jerome M. Cohen 1st Lt. MSC USA	Charles G. Sarce 1st Lt. DC USA
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Eugene P. Conkre Comdr (MC) USA	Malcolm S. Schry 1st Lt. MSC USA
Myrtle M. Denfey Capt. ANC USA	Edward N. Schwartz Lt Col USAF (MC)
Eugene P. Dillon 1st Lt. MC USA	Lois I. Sigalw Capt. DC USA
Bernard W. Dun Lt Col USAF (DC)	Samuel J. Tila 2d Lt. MSC USA
Charles M. Elwood, 1st Lt. MSC USA	Robert C. Timpler Capt. MSC USA
Michael A. Guli Maj DC USA	Peter P. Ugarsk Capt. MSC USA
Lea B. Gitt 1st Lt. MC USA	

Oak Leaf Cluster

Awarded posthumously

The names of officers of the medical service who have been awarded decorations by the United States Army Navy or Air Force are published in this department each month following receipt of information from official sources.—Editor

PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army Navy and Air Force have recently received permanent promotions to the rank indicated

Medical Corps

S A B h M y USA
S n f d L B i l t Capt USAF
W n e F B w C l USA
V c P C a p p i l u z Capt USAF
R b e r t G a C l USA

H a l d E H a i s C l USA
H b e r t W M i l l L t C l USAF
G g F P C l USA
C h a l O R i x y M y USA
H I E S d d Capt USAF

Dental Corps

W i l l i a m C A d a m s Capt USAF
E t M B a u r d Capt USAF
P h i l p B r a l Capt USAF
G g F C n s C p t USAF
R y e D l Capt USA

R b e r t N H a n g o n Maj USA
W o d a d M H n g J Maj USAF
B i l l D M G w Capt USA
W C M y Maj USAF
J h W P l m m e Capt USA

Veterinary Corps

W i l l m R B l d b a k Capt USAF
F d i k W C l a y t Capt USAF
E d w d E D C p t USA
R u s i l F G Capt USAF

D u e l F M Capt USAF
J h L R C p t USAF
R y w U p h a m C p t USA
D l d H Y Capt USA

Medical Service Corps

J h a N A l l i n s Capt USAF
W i l l m S B e c k Capt USAF
E m r y B B h J t l t Lt USAF
A l n d J C a d i l l t Lt USAF
O w F C l l y Capt USAF
R y m d J C k C p t USAF
W i l l i a m T D d g M y USAF
N m a S D o w M y USA
G e g J F o e g l t Lt USA
R b e r t L G M a y USAF
W l t F G a n e C p t USAF
L W H a l l l t Lt USAF
H w d C H a n s l y J M a y USAF
D l M H J C p t USAF
F r a n c L H i l h a Capt USAF
R u s i l E H M y USAF
L u i G H o w i l l M a y USAF
J h A J h n s Capt USAF
A l l d D K n e y l t Lt USA

H m a I L l C p t USAF
J m E M a h l t Lt USAF
K n e t h L M a l l Capt USAF
R b A M g b l t Lt USAF
M a H M i x J l t Lt USAF
L y B M l t Lt USA
H a r y B N l y J Capt USAF
R y C P c e l t Lt USA
R b e r t J R f C p t USAF
D a l d J R l l g Capt USAF
H a l d G S h l t C p t USAF
S u n S S m i t h M a y USAF
K b E S m y t h Capt USAF
W i l l i a m E W i l l Capt USAF
C h a l J W d m a n C p t USAF
D b R W h t Capt USAF
D a l d R W k l b l h Capt USAF
H n r y M W l l C p t USA
B l l y B Z i l l Capt USAF

Nurse Corps

M a t h a D l t Lt USA
B Y D M y USAF
M d l y n N P k s l t Lt USA

D M R b n, l t Lt USA
L l C S l a r y M y USAF
M l d d E S m b M a y USAF

The following officers have been promoted to the temporary rank indicated

Medical Corps

Donald J Alhreich *Capt USAF*
 James F Allison Jr *Capt USAF*
 Julius M Amberson *Capt USN*
 David M Bikoff *Capt USAF*
 Alexander F Bonacini Jr *Capt USAF*
 Anthony R Bucalo *Capt USAF*
 William W Clavelod *Capt USAF*
 Jerome R Cornfield *Capt USAF*
 William J Craig *Capt USAF*
 George S Crofford *Capt USAF*
 Roy E Crowder *Capt USN*
 Angel Diaz Montanez *Capt USAF*
 Wesley Fry *Capt USN*
 Harold D Giddings *Capt USN*
 Walter W Gilbrecht *Capt USN*
 Abner M Glover Jr *Capt USAF*
 Philip M Goring *Capt USAF*
 Jack K Godich *Capt USAF*
 Milton Green 1st Lt *USAF*
 William E Green Jr *Capt USAF*
 Frank W Guthrie Jr *Capt USAF*
 Gilbert W Hague *Capt USAF*
 John S Hanten *Capt USN*
 Robert E Henderson *Capt USN*
 Harold H Hill *Capt USN*
 Charl K Holloway Jr *Comdr USN*
 Arthur I Hunter *Capt USAF*

Robert L Knox *Capt USAF*
 William H Long III *Capt USAF*
 George M Lynch *Capt USN*
 John B Lynch, *Capt USAF*
 David C Marshall *Capt USAF*
 Presley F Martin *Capt USAF*
 John F McCabe *Comdr USN*
 Robert L Michael *Capt USAF*
 James N Moore *Capt USAF*
 John A Morton *Capt USAF*
 Bernard N Nathanson, *Capt USAF*
 Samuel G Perlson *Capt USAF*
 Joe A Preley *Capt USAF*
 Haskell I Rabnowitz *Capt USAF*
 William C Rike Jr *Capt USAF*
 Sterling J Ritchey *Col USA*
 John W Rill *Capt USAF*
 Harold C Scheffer *Capt USAF*
 Seymour Schiffman *Capt USAF*
 James B Seaman *Col USA*
 William Smith Jr *Capt USAF*
 Kenneth Sowers *Col USA*
 H N Spence *Capt USAF*
 John H Stieve Jr *Comdr USN*
 Benjamin H Sullivan Jr *Col USA*
 Cecil C Ward *Capt USAF*
 Herman D Wyster Jr *Capt USAF*

Dental Corps

Otto R Bensen *Capt USAF*
 Raymond L Blancher *Comdr USN*
 Paul Bosman, *Comdr USN*
 William J Charm, *Capt USN*
 John M Chikuma *Capt USAF*
 Robert A Colby *Capt USN*
 George J Collings *Capt USAF*
 Calvin L Fos *Comdr USN*
 Glen C Gould *Capt USAF*
 John P Guinane, *Capt USAF*
 Raymond F Johnson Jr *Capt USAF*
 John M Kinsler *Capt USAF*
 William L Ksiriky *Comdr USN*

John B Lefors *Capt USAF*
 George C Luffy *Capt USAF*
 Edward L Maggard *Capt USAF*
 Stuart McN Michell *Col USA*
 Robert J Muller *Capt USAF*
 L J Muny *Capt USAF*
 Leon Perahia *Capt USAF*
 Winlaw A Pribbe *Col USA*
 Malcolm S Sharpe *Capt USAF*
 Bernard Stahl *Capt USAF*
 Charles R Starke *Capt USAF*
 James S Teller III *Capt USAF*
 Gerald S Wank *Capt USAF*

Veterinary Corps

Stephen G Ashill *Col USA*
 Joseph D Mages *Col USA*

Alex Munsoo May *USAF*
 John H Rust *Col USA*

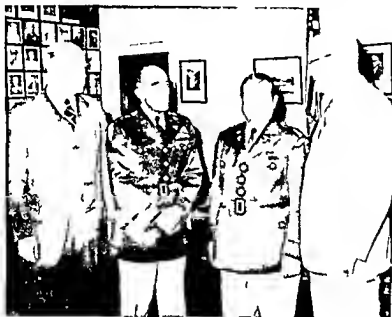
Medical Service Corps

George R Biers *Capt USAF*
 Harry Byrd Jr *Capt USAF*
 Fort E Blyde *Capt USAF*
 Jeff J Burnett *Capt USAF*

Herman H Burton, *Comdr USN*
 Charles F Chalmers *Capt USAF*
 Harry W Combs Jr *Comdr USN*
 Howard M Dent Jr, *Capt USAF*

DR I S RAVDIN, DISTINGUISHED SURGEON NAMED MAJOR GENERAL IN RESERVE CORPS

Dr I S Ravdin John Rhea Barton Professor of Surgery at the University of Pennsylvania and a member of the Civilian Health and Medical Advisory Council to the Assistant Secretary of Defense (Health and Medical) on 15 February 1955 became the first reserve Medical Corps officer of the Army to achieve the rank of major general while on inactive status



Left to right: Dr. Frank B. Berry, Major General George E. Armstrong, USA, Major General I. S. Ravdin, USA, and Major General Howard McC. Snyder, USA (Ret.).

The promotion ceremonies for Dr. Ravdin in the office of Major General George E. Armstrong, Surgeon General of the Army, were attended by his wife, Dr. Elizabeth Ravdin, and daughter, Mrs. Donald Bergus, and Mr. Bergus, Dr. Frank B. Berry, Assistant Secretary of Defense (Health and Medical), and Major General Howard McC. Snyder, USA (Ret.), Physician to the President, in addition to high ranking Army medical officers were present to congratulate Dr. Ravdin.

Two other Army reserve Medical Corps officers elevated to brigadier general in the Medical Corps at the same time Dr. Ravdin was promoted were Dr. James B. Mason, Chicago, director of professional education and accreditation of the American College of Surgeons, and Dr. Manfred U. Prescott of San Francisco.

A MESSAGE FROM THE A M A

The Army Service Graduate School at the Walter Reed Medical Center in Washington D C has been conducting a course on "Medical Care of Atomic Casualties" for military medical officers and civilian physicians interested in the medical aspects of civil defense preparedness. A brief report on some of the items covered in this course is both timely and of interest to medical officers.

Upon release from active duty, medical officers can make important contributions to civil defense at the state and local levels. Some of the experience and training received by them in the military service is equally applicable to civil defense activities. In time of national emergency and in the event of an enemy attack upon the civilian population, the biggest responsibility will fall to physicians.

Although the medical profession is acutely aware of its role and has demonstrated great interest in the medical aspects of civil defense, there is still much to be done. It is certain that a severe shortage of physicians to render medical services for mass casualties in the event of atomic attack will exist. Therefore, it is essential that medical officers upon release from active duty, participate in civic affairs directed toward civil defense preparedness.

"Medical Care of Atomic Casualties" is a 10 day course. The most recent session was held from 7 to 16 March. Classes have averaged about 100 in attendance. The next course is scheduled to begin on 11 July 1955. The course usually opens with a briefing on the development of the atomic and hydrogen bombs. An outline is then given on the various tests made on the atomic bomb, the physical results, as well as the casualties caused by an explosion. A discussion of the Hiroshima and Nagasaki bombings is included in this part of the course.

Following this is a detailed discussion of the total casualties which may be anticipated from these types of explosions. This subject includes reports of the different medical specialties as they relate to treatment. Next, the importance of sorting casualties in triage is explained and emphasis is given to preparation of the civilian population as well as the individual soldier on "self help" and buddy or mutual aid.

From The Council on National Defense of the American Medical Association. The views and opinions expressed are not necessarily those of the Department of Defense.
—Editor

The course points out that in the event of an enemy attack using modern day weapons three primary types of casualties will have to be dealt with. Casualties would occur from (1) blast, consisting of primary and secondary wounds (2) thermal including first second and third degree burns and (3) ionizing radiation the later effects on those who reach a dressing station. Talks are also given and discussions held on special treatment of burns shock fractures debridement blood and blood substitutes and expanders. One lecture is devoted to civil defense and an afternoon is spent at the Civil Defense School at Olney Md. Biologic and chemical warfare are likewise reported on and discussed.

These courses have made it apparent that an atomic bomb will cause much destruction of property and life as well as produce mass casualties. Multiple atomic bomb attacks or use of the hydrogen bomb will multiply these results to much larger proportions. The courses have also demonstrated that preparation from the medical standpoint must be to an extent hitherto unknown. In spite of this gigantic task the course does show how the medical profession can effectively handle such an attack if it has proper preparedness. The demands will be so great that use of paramedical personnel must be planned. These would include dentists veterinarians nurses technicians former medical corpsmen et cetera.

Plans are being made by the Army to conduct this course every two months this year for the purpose of educating military medical officers and civilian physicians in the care of mass casualties following an atomic or hydrogen bomb attack. The Surgeon General of the Army assisted in providing a team of physicians which is visiting medical societies and medical schools to present some of the high points of the course.

The unwarranted use of parenteral medication favors haphazard diagnosis and follow up care—it leads to prolonged and unnecessary therapy unless kept rigorously supervised. There is considerable evidence that many iatrogenic illnesses are induced by the unnecessary use of shots. It would be well if each of us resolved to scrutinize closely and analyze carefully our indications for parenteral medications.

—JESSE D. RISING, M.D.

Minor Medical

p 1019 Dec 1954

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Reviews of Recent Books

RECENT DEVELOPMENTS IN PSYCHOSOMATIC MEDICINE, edited by *Eric D Wittkower* M D and *R. A Clegborn* M D D Sc 495 pages
J B Lippincott Co Philadelphia Pa 1954 Price \$10

This volume is actually a summation of recent developments in psychosomatic medicine and fulfills its purpose. It is also an effort to organize and codify current knowledge. The 29 contributors are outstanding in the field and much of the writing is excellent. One of the two sections of the book is devoted mostly to specific disease entities and the other section is more significant as a synthesizing effort to join common denominators in a total picture of psychosomatic medicine. Of considerable interest and importance retrospectively is the chapter on historical developments. Each chapter is followed by a well selected bibliography.

This book is recommended reading as a text as a yearbook and especially as a cross sectional evaluation and definition of the subject. This is not to say that it makes easy reading or can be easily digested by the novice. On the contrary, so much thought and effort are captured in this volume and so many issues are raised that reading and re-reading are indicated. —DONALD B PETERSON Col MC, USA

THE DIGITAL CIRCULATION by *Milton Mendlowitz* M D 182 pages illustrated Grune & Stratton Inc New York N Y 1954 Price \$6.75

This monograph brings together much information on the anatomy, physiology and pathology of the digital circulation which would otherwise require the student to search through many references (636 are listed) to review the available investigative methods of skin temperature measurement, plethysmography and graphic oscillography.

Chapters on anatomy, physiology, pharmacology, pathology and methods are well written. In others there are clinical considerations of peripheral vascular disease, clubbing, hypertension, sympathectomy, coronary occlusion, anemia and polycythemia. These chapters serve as illustrations of the abnormalities of digital circulation present rather than as diagnostic or therapeutic instructions on peripheral vascular disease. Of particular value are the author's extensive personal contributions to the study of the digital circulation.

This work is attractively illustrated and well indexed. It can be recommended as a valuable reference for all students of the subject with either a research or clinical interest. This group is not a large one, however. For the internist and student, availability of this work in the library should suffice. —BYRON E POLLOCK, Col MC, USA

CONTROL OF RATS AND MICE Vol m I d II, R t du d by D m
 Ch tly V lum III Hou M d t d by H N South m. V lum s I
 a d II 532 p g v lum III, 225 p g s ill t i d. Oxford U i ly
 P New Y k N Y 1954 Pr \$16 80 per i of 3 lume

These volumes report on rodent control research conducted by the Bureau of Animal Population Department of Zoological Field Studies Oxford University during the period from September 1939 to July 1947 During that time the Bureau acted as a research and scientific advisory service on rodent control to the Agricultural Research Council and through it to other government departments

A wealth of information is presented on the properties of poisons used in rodent control bait stations habits and ecology of rodents their response to baits and rat and mouse control in specific environments A detailed index and numerous references add to the usefulness of the volumes Their value is restricted by the fact that the work reported was largely wartime research in England which necessitated placing emphasis on those poisons and bait materials available at that time It is particularly unfortunate that a book appearing in 1954 devotes so little attention to the anticomulant rodenticides The only mention of this subject is a two-page discussion of warfarin

The editor states in the preface that anyone who wishes to get rid of rats is strongly advised to obtain the government bulletins referred to in chapter 1 This will be cheaper and better than trying to use the present volumes as a manual on rat control With this opinion I agree These volumes should be of great value to those engaged in research on rodents and their control but they do not satisfy the need for a reference volume on the control of rodents for the use of those who plan and supervise such activities —RALPH W BUNN Lt Col MSC USA

THE YEAR BOOK OF MEDICINE dited by P ul B B on, M D C I
 M benb m M. D Will am B. Castl M. D T ly R H n n,
 M D F z j l g l f ger M D d P bl p K. B ndy M. D 711
 p g ll t r t d Th Year Book P bli he I c Ch g Ill 1954
 P \$6

The abstracted articles in this new edition are from reports in U S and foreign journals during the period from May 1953 to May 1954 The articles on infections rbe chest blood and blood forming organs heart blood vessels kidneys digestive system and metabolism selected for abstraction adequately cover the literature of the period and reflect the wide range of knowledge and interest of the editors Their concise and critical comments following many of the articles are helpful

The publication data following each article provides the reader with a ready reference to the original material The index is excellent This edition compares favorably with its valued predecessors and the excellent format is unchanged This volume remains a must for every practicing physician —MERRILL C DAVENPORT Col MC USA

THE VOICE OF NEUROSIS by *Paul J. Moses* M.D. 131 pages illustrated
Grune & Stratton Inc. New York N.Y. 1954 Price \$4

This is probably the most complete treatise published concerning the evaluation of neurotic traits of personality through an analysis of speech. The author's philosophy is based on the premise that there is a definite correlation between neurotic tendencies and the character of the voice.

The development of vocal character is discussed in the first portion of the book and the influence of environmental experiences on the personality as expressed through the voice is traced from infancy to adulthood. A major portion is devoted to a discussion of a rather detailed list of acoustic dimensions of voice with respect to how these dimensions are affected by various types of neuroses. Conversely the influence of the most commonly encountered neuroses on voice is explained. Exemplary relationships between the various dimensions of voice are given as an aid to analysis of neurotic personality.

The book is well written and is relatively free of difficult unfamiliar technical terms. The author has done well in breaking down the various aspects of voice and of stressing the development of voice characteristics in relation to the type of neurotic symptoms. He might have indicated however that an evaluation of personality through vocal analysis should be verified by other recognized means. In addition advice might have been given on proper referrals and follow up. Recognition is not given to the importance of the team otolaryngologists, psychiatrists and speech pathologists need each other's services in treating voice disorders.

Although the book is probably intended primarily for psychologists the otolaryngologist, psychiatrist and speech pathologist should find it most helpful because most of the discussion and all the case histories involve functional voice disorders.—*JAMES P. ALDRITE* Maj. MC USA

PHYSICAL THERAPY AFTER AMPUTATION by *Margaret Bryce* 92 pages illustrated University of Wisconsin Press Madison Wis. 1954 Price \$1.50

This manual presents the standard procedures for the rehabilitation of patients following amputations below, through or above the knee. These are discussed chronologically starting with the techniques and procedures for positioning of the amputated leg immediately following operation and continuing through the phases of bandaging, exercises and prosthetic training. The steps are graphically illustrated in an appended chart. Sequence of Events which indicates in weeks the progression of treatment procedures for uncomplicated amputation.

The description of the treatment procedures is clear and concise and designed to provide easy reference. Further description of the methods of bandaging the amputation stump below the knee would have improved the chapter on bandaging. Much practical information on the cause of various limps and suggested corrective procedures is included. The

chapter on prostheses presents information on the elementary principles and types of prostheses which is essential to an intelligent application of exercise and gait training procedures as well as to effective co-operation with the prosthesis maker in the achievement of good results. A separate chapter is devoted to the suction socket.

The bibliography is excellent and is an asset to the physical therapist's professional library. The author of this book is to be congratulated on having compiled a well organized, valuable and practical manual for physical therapists concerned with the care of lower extremity amputees.—*HARRIET S LEE Lt Col WMS(CPT) USA*

RADIOLOGY by *Floyd H. Little* M.D. 2d ed. 439 pages. 1954. Price \$8.50.

This textbook of diagnostic and therapeutic radiology was written expressly for the undergraduate student of medicine. It covers the fundamentals of the subject in a concise, readable and interesting manner. The revised edition has faithfully followed the intent of the original volume but the material has been brought up to date. The principal additions include discussions of congenital heart lesions and their demonstration with angiocardigraphy, pulmonary constrictions, new methods for cholecystography, Hirschsprung's disease, presacral pneumography and translumbar aortography. The therapy section now includes material on the production and use of radioactive isotopes. The author includes his five year cure rates in treating patients with the most common malignant lesions.

The diagnostic section is illustrated with well chosen and excellent reproductions. The therapeutic section presents the most common malignancies of the major body regions and describes treatment in general terms. Nonmalignant conditions are also briefly discussed. The ultimate target as expressed by the author is an understanding of the foundations upon which modern therapy is built.

The bibliographies are well chosen and provide a list of the most significant contributions from the literature, although in keeping with the purpose of the book they are limited in number. The index covers the subject matter adequately. This is a useful book for residents in radiology and a compact reference for the clinician interested in this field.—*PAULO WELLS Col MC USA*

EXISTENCE AND THERAPY by *Ulrich S. Maennchen*, Ph.D. 372 pages. Gr. & St. N. W. York, N. Y. 1954. Price \$5.

This book is difficult to read and even more difficult to understand. The language is often abstract and abstruse; most of the concepts and ideas are essentially dialectic, metaphysical and ontological.

The contents are divided into three parts: The Crisis of Knowledge and the Rise of Phenomenology; The Spectre of Nothingness and the

Janus Face of Reflection and The Peril to Man and Psychotherapy The Freedom to Be Despite the use of the term therapy in the title the author is primarily concerned with existential analysis (somewhat related to Sartre's writings) and the reader will search in vain for any appreciable discussion of therapy Of significance is the fact that the term therapy is not listed in the five page index!

The author is oriented toward a Gestalt type position although the exact nature of his thesis is not communicated clearly in the text Virtually all bibliographic references are to philosophers Gestalt psychologists and psychoanalytic writers Extensive use is made of words set off in italics presumably for emphasis however this merely seems to emphasize the confusion inherent throughout the volume

There is no mention of the type of reader the author hopes to reach This reviewer can find little to recommend about this book to anyone except a staunch pre Reichenbach student in philosophy

—SEYMOUR FISHER Ph D

THE NEW WARFARE by Brigadier C. N. Barclay C B E D S O 65 pages
Philosophical Library Inc New York N Y 1954 Price \$2.75

We are living in a period of limited war rather than in a time of uneasy peace according to Brigadier Barclay A new type of warfare has evolved which uses weapons against the mind and emotions of a people as distinct from those which render bodily and economic harm It is motivated by the fear that another all out shooting war would be catastrophic to the two major ideologic forces pitted against each other today The various weapons of the new type warfare include a deliberate and carefully wrought campaign of threat propaganda and subversive activity as well as limited shooting sometimes by proxy Until there is resolution of the conflict between Russian communism and free democracy this warfare must be continued upon a realistic basis This includes acceptance of the fact that the present world disturbance will take a long time to remedy and that the problem must be solved by a proper blend of moral and material values without too much emphasis upon either

While this volume attempts to formulate basic principles and techniques for carrying out the new warfare it does not expand them It is indeed little more than a precis Although it can provide ready reading for the casual student of military history it cannot sustain the depth of interest aroused by a Clausewitz or a Mahan—MAE M. LINK, Ph D

CLINICAL APPROACH TO JAUNDICE by Leon Schiff M D Ph D American Lecture Series Publication Number 202, A Monograph in American Lectures in Abdominal Viscera Edited by Lester E. Dragstedt M D 113 pages illustrated Charles C. Thomas Publisher Springfield Ill 1954 Price \$3.75

The opening sentence of the author's preface states that accurate diagnosis of the cause of jaundice is essential to proper therapy This

statement cannot be disputed and the monograph does much toward presenting and clarifying the means for making such accurate diagnosis. The subject matter is divided into chapters on clinical examination, laboratory tests, roentgen examination, needle biopsy of the liver, and limitations and pitfalls.

In the first chapter the reader is told that a well taken history and properly observed physical examination should lead one to a correct diagnosis in 60 to 80 percent of cases. Another chapter discusses liver function tests and provides a brief but adequate description and interpretation of each of those related to this organ and to obstructive disease. Under supplementary tests is discussed the very useful but comparatively infrequently used duodenal drainage. The section on roentgen examination presents 20 reproductions of roentgenograms and only serves to show that little help in the differential diagnosis of jaundice may be expected from this source. The techniques for performing needle biopsy of the liver are described and 22 photomicrographs of liver biopsy specimens are reproduced. They represent the various lesions one may expect to find in the diseased and invaded liver.

In spite of the author's apology the bibliography is extensive enough the index is complete and all illustrations are clear. The reader may refer to this book and obtain desired information almost at a glance. This monograph represents the present day trend toward small unit references rather than cumbersome all inclusive expensive volumes.

—RALPH VOLK, C mdr (MC) USN

DIAGNOSIS AND TREATMENT OF THE ACUTE PHASE OF POLIOMYELITIS

AND ITS COMPLICATIONS. dictated by Alb. G. Bou. M. O. 250

Pg. 64. The Williams & Wilkins Co. Baltimore, Md. 1954

P. \$6.50

Under the guidance of the editor 14 associates with a vast experience in the management of acute poliomyelitis have collaborated in writing a modern classic. The most prominent feature is the recurring emphasis on the early recognition and rational management of respiratory failure. No patient dies of acute poliomyelitis except as the result of respiratory insufficiency; he can't breathe so he dies. The hand of the editor is evident throughout in reaffirming this principle as the paramount consideration in the management of the acute stage.

Authorities may differ with some of the fine points expressed but this is a practical book founded on clinical experience and designed for practicing physicians who may need guidance in immediate matters of management as such it is admirably conceived and concisely and lucidly presented. Particularly noteworthy are the chapters: Detection and Care of Respiratory Difficulty, Biochemistry, Electrolyte Changes, and Experience of Washoe County Medical Team.

The illustrations are excellent. Those relating to mechanical devices described and advocated in the text—tracheotomy tubes, nebulizer unit, ventilation meter, and respirators and accessories—are of real value.

in their contribution to the effectiveness of the book. The bibliography is not extensive but it need not be in a book concerned mainly with the personal clinical experiences of the authors. The effectiveness of the recommended procedures in the management of respiratory failure is disclosed in the combined mortality rate over a two year period of only 20 percent for respirator patients as contrasted with the usual mortality of 50 percent or higher among such patients.

This book should be in the hands of every physician who is likely to see patients with acute poliomyelitis.

—ROBERT K. MOXON *Li Corps (MC) USN*

THE GRAPHOMOTOR PROJECTION TECHNIQUE by Samuel B. Kutash Ph.D. and Raymond H. Gebl, M.D. American Lecture Series Publication Number 218. A Monograph in The Bannerstone Division of American Lectures in Psychology. Edited by Molly Harrower Ph.D. 133 pages illustrated. Charles C. Thomas Publisher Springfield Ill. 1954. Price \$3.75.

This manual presents the facts and principles underlying the administration, scoring and interpretation of a new psychodiagnostic method called the graphomotor projection technique. Consisting of five brief chapters the authors discuss the historical background and theory, administration and scoring methods, clinical utility with specific case illustrations and a comparative study of schizophrenics and normals. Appended record blanks, a bibliography and an index complete the volume.

The graphomotor projection technique requires a blindfolded subject to devote two five minute periods to the free unstructured movement of a pencil on a nine by nine-inch square of paper. After each period the subject spends a short time identifying any objects, pictures and figures suggested to him by the tracings. The production is then scored in numerous ways e.g. in terms of latency, density, speed of movement, line width, line breaks, number of times off the page, number of pauses, content identification and general configuration. The rationale of all this is that the productions are presumed to reflect the subject's "inner promptings," available energy, co-ordination, tension and "degree of conscious control."

A comparative study of schizophrenics and normals provides evidence of the reliability of scoring and the validity with which distinctions can be made between the groups in terms of production measurements. Unfortunately, however, the validity with which the technique can be used as a general psychodiagnostic tool is not underwritten by comparable experimental evidence. No doubt the authors plan to secure such evidence. Meanwhile they have asked the reader to rely upon their clinical judgment and experience. Under these circumstances the best that can be said is that their speculations about the diagnostic implications of various signs are hypotheses which require experimental verification. —ROBERT B. PAYNE *1st USAF (USC)*

CLINICAL MEASUREMENT OF UTERINE FORCES IN PREGNANCY AND LABOR by *S R M R ynold Ph D D Sc Jer m S Harr M D*
nd Irw H K M D Ph D 328 p g ll str ted Ch l C
Th m s P bl h Springfield Ill 1954 P i \$9 50

The title of this book is somewhat misleading. The field of uterine dynamometry is clinical in the sense that it is applied to patients but it is not clinical so far as its application to everyday clinical practice is concerned. The book is written mainly for those who are interested in research on uterine contractions especially those unfamiliar with the technic of planning and conducting tests and analyzing the results obtained on a series of cases.

The authors hope that this work will hasten standardization of terminology and procedure in a field of investigation where at present a great deal of confusion exists. Its value as a reference would have been greatly enhanced had the authors based their conclusions on results obtained from the study of an adequate number of cases. Notable omissions in the types of cases studied are those with premature separation of the placenta and those receiving general anesthesia.

Experimental work concerning the effects of epinephrine and norepinephrine on the uterus is described in detail. The authors speculate that the adrenal medulla may be the factor responsible for the ineffective contractions of the apprehensive patient. They cite recent investigations by other workers which show that epinephrine blood levels are much higher in the frightened patient than they are in the reassured one.

For those obstetricians who are not by now familiar with the technic of using dilute intravenous pitocin (alphahypophramine) solution for selected cases of inertia for the induction of labor and for postpartum atony the chapter on the effect of pitocin on the uterus is well worth reading. Also of value to the practicing obstetrician are those sections dealing with the effects of the psyche anesthetics and analgesics on labor.

The work is well printed on a good grade of paper with a large and clear type. The binding is adequate and the text is amply illustrated.

—LEWIS T DORGAN Capt (MC) USN

TEXTBOOK OF BACTERIOLOGY by *J eph M D gh rty Ph D d*
A tborny J L mb t M S 3d d rion 598 p g 190 ll tr tio s
Th C V M by Co St Loui Mo 1954 P \$8 25

This volume serves two major objectives by incorporating many of the features of a general bacteriology text along with those aspects usually emphasized only in treatises on microorganisms of medical importance to man. The author's philosophy holds that full realization of the role played by microorganisms in the development of present-day social and economic structures is desirable for attainment of a broad academic background. It follows that the college undergraduate can more readily achieve this understanding by thorough comprehension

of the basic concepts of the science of microbiology than through accumulation of highly technical knowledge which may not have general application. In keeping with this philosophy the subject matter for the most part is presented rather briefly and concisely. While this approach permits broad coverage of topics, brevity affords the opportunity in some instances for misinterpretation by the reader of the exact meaning or full implication of key terms and vital concepts. Amplification of material in lecture or assignment of collateral reading from carefully selected review articles would enhance the value of this text, particularly for those students whose chosen field of study lies within the biologic sciences.

Illustrations are generally of excellent quality, although in some cases equipment no longer commonly encountered in modern laboratories is portrayed. A considerable part of the bibliography which follows each chapter is devoted to the older literature, including many publications of largely historical interest; however, a sufficient number of recent texts are referenced so that effectiveness is retained. This volume accomplishes quite adequately the purpose for which the authors envisioned it—primarily as an introduction to microbiology for those undergraduates interested in a rapid survey of this field of science.

—FRANKLIN L. DAVIS, J. CAPT. USAF (MC)

ROENTGENOGRAPHIC TECHNIQUE by *Darmon Artelle Rhinehart* M. D.
4th edition thoroughly revised 454 pages 216 illustrations Lea &
Febiger Philadelphia Pa. 1954 Price \$8.50

The author improved an already excellent text in this fourth edition. It is primarily intended for the training of technicians, medical students, and physicians who occasionally do roentgenographic work. In the words of the author, emphasis is placed on a method of developing a roentgenographic technique by experimental exposures and by charting the results of actual diagnostic procedures. Discussion of the more technical procedures, such as kymography, body-section roentgenography, cardiography, and cerebral angiography, has been omitted.

The text is well illustrated. In nearly every case the technical details are accompanied by a photograph of the patient correctly positioned and by a reproduction of a typical radiograph. These make for easy reading and understanding. Although the material is presented in a simple and concise form, the more advanced reader can find references for additional information in the extensive and up-to-date bibliographies which follow 19 of the 21 chapters. The material is well indexed. The chapters on the roentgenographic examination of the teeth and of the gastrointestinal tract are particularly good. The printing and binding are attractive.

This book should be of interest to technicians and residents in radiology, physicians doing occasional roentgenographic work, and radiologists responsible for the training of medical students and technicians. —ROBERT V. CALLESTER, MAJ. MC, USA

PARKINSONISM AND ITS TREATMENT edited by L. W. J. Doherty M.D.
 Philadelphia: J. B. Lippincott Co. 1954. Pp. 152. \$3.

This small monograph of nine chapters each written by a recognized authority in the field of neurology was prompted by the increasing interest in Parkinsonism by general practitioners. It will serve as a handy reference book for the better understanding of the problems of this symptom complex and its management.

First the basic problems of Parkinsonism in regard to etiology, classification, pathophysiology, symptoms and treatment are outlined. In Chapter II the structure of the extrapyramidal system, its physiology and finally the pathophysiology of this system are discussed and some of the recent animal experimental work is described. In Chapter III the causes of postencephalitic idiopathic (paralysis agitans) and arteriosclerotic Parkinsonism are discussed. The pathology of Parkinsonism is discussed in Chapter IV under the subheadings of idiopathic, postencephalitic, arteriosclerotic and syphilitic types and intoxication by carbon monoxide and other poisons. In Chapter V the symptomatology is presented in a nicely arranged chart comparing the postencephalitic, idiopathic and arteriosclerotic types as to differences in age of onset, sex, past history, prodromata, type of onset, symptoms and their nature and course. Diagnostic signs and tests, differential diagnosis and the course and prognosis are briefly presented.

In the next chapter the present day chemotherapy for Parkinsonism is presented and it is pointed out that drugs plus psychotherapy and physical therapy are the aims in the total treatment of the patient. Chapter VII emphasizes that the patient with Parkinsonism needs physiotherapy to keep the joints and muscles as nearly normal as possible and to prevent arthritis, chronic myofibrositis and severe and painful contractures. In the total rehabilitation of the patient a good home program is strongly recommended. Chapter VIII concerns psychotherapy which is not aimed at curing this organic disease but is used as an adjunct in treatment to help the patient better adjust to his organic disease. In the final chapter the various neurosurgical procedures which have been used in the past and are now being used in an attempt to abolish rigidity and tremor are briefly summarized. No one procedure has become standard; the operative effect is more on lessening tremor than rigidity and the final results seem to be related to the amount of paresis incidentally produced by the procedure.

This book is well organized and indexed. The bibliographies are excellent and the illustrations are clear and adequately labeled. This monograph is highly recommended to the general practitioner and to all interested in Parkinsonism and its treatment.

—JOHN W. SUMNER, Lt Col MC USA

PROCEEDINGS OF THE FOURTH INTERNATIONAL CONGRESS OF THE
INTERNATIONAL SOCIETY OF HEMATOLOGY 473 pages illustrated
Grune & Stratton Inc New York N Y 1954 Price \$10

This volume contains most of the formal presentations at the Fourth International Congress of the International Society of Hematology held September 20 to 27 1952 in Argentina and attended by more than 300 hematologists from various parts of the world It is divided into seven parts each containing the principal addresses of which most are original material and presented in full and communications which of necessity are in abstract form only Although a large part is written in Spanish excellent succinct summaries follow both in English and Spanish

The seven parts cover Neuroendocrinologic regulation of hematopoiesis and hemostasis histochemistry and cellular ultrastructure etiology and treatment of the leukemias manifestations of radioactivity on hematopoietic organs and hemostasis polycythemia hemolytic diseases hemorrhagic disturbances and a miscellaneous part covering classification of anemias unusual manifestations of sickle cell anemia L E cells and electrophoretic patterns Much of the material is indeed scholarly in its presentation and excellent charts tables graphs and illustrations have been included Many of the subjects are highly scientific although there are enough clinical articles to hold the interest of both the researcher and practicing hematologist

This volume succeeds in impressing the reviewer with the fast broadening picture and the rapid progress being made daily in the complex field of hematology It is recommended to all who are interested in the clinical laboratory or research phases of this specialty

—RICHARD I CRONE Col MC, USA

BABIES ARE HUMAN BEINGS by C Anderson Aldrich M D and Mary M Aldrich 2d edition 122 pages illustrated The Macmillan Co New York N Y 1954 Price \$2 95

This book was first published in 1939 This means that a book published 15 years ago and now out of print is still important enough to reset and republish No book in the field of psychiatry can get a better review than that When first published this book was not reviewed by the Journal of the American Psychiatric Association Since that time the statement in its title has become much more of an accepted fact and babies as thinking feeling and reacting individuals have become a prime concern of psychiatrists pediatricians psychologists social workers sociologists and anthropologists as well as parents

This second edition of a book that was one of the beacon lights of a more enlightened era in infant and child training and in infant and child parent relationship contains only minor changes from the original text It presents babies as human beings through an interpretation and explanation of their physical and emotional growth and development

(4) from 180 to 600 or 1 200 mg (from 300 000 to 1 000 000 or 2 000 000 units) of penicillin daily is adequate therapy for a disease as potentially fulminant and rapidly fatal as acute bacterial endocarditis (page 206) (5) regular digitalization during the first week of each month is beneficial in preventing the occurrence of heart failure (page 580) (6) mortality from pulmonary edema is now far higher than it was 60 years ago (page 580)

One of the highlights of the text is the emphasis placed on the physiology of the cardiovascular system and on the pathologic physiology of cardiovascular diseases. There is an extensive bibliography from both the American and European literature. This book is a valuable reference work concerning the graphic registration of cardiac phenomena

—WELDON J WALKER Lt Col MC USA

BIOCHEMISTRY by Abraham C Low M D and Bernard Schepitz Ph D
848 pag ill trat d W B Saunders Co Philadelphia Pa 1954

This new text of biochemistry was designed primarily for the first year medical student. In it the authors have attempted to explain the dynamic aspects of biochemistry with minimum reference to fundamental structure reactions and basic chemical principles of organic and physical chemistry. Although this may have been accomplished more time in the classroom will be required to clarify fundamental chemical relationships.

The authors have described the general subject matter fully and have divided it in a manner similar to that used in current texts on this subject. They have emphasized the many interrelationships between various biochemical processes and the mechanisms involved in regulatory actions particularly metabolism. Special chapters on methods of investigating intermediary metabolism biologic oxidations bioenergetics and high energy phosphate precede those on the metabolism of carbohydrates lipids proteins and related substances and lend clarity to the discussions on these subjects. These are followed by a chapter on metabolic antagonism which rounds out a lucid discussion of metabolic processes and another on hormones is enhanced by an outline of the current system of nomenclature of the steroid hormones. This is followed by discussions of the accepted facts concerning the secretion and functions of the other hormones.

The text would benefit by more complete discussions and illustrations in the chapters on energy metabolism and the general biochemical aspects of diet. In a few instances it may be difficult for the student to find formulas of important compounds that are easily identified viz creatine and creatinine pages 521 and 522. A selected bibliography at the close of each chapter provides an incentive for further reading. The volume is well illustrated and has an index superior to that found in most textbooks —ERNEST M PARROTT Maj MSC USAF

HYPOGLYCEMIA AND THE HYPOGLYCEMIC SYNDROME by A J Kauva
M D American Lecture Series Publication Number 195 A Monograph in
American Lectures in Endocrinology edited by Willard O Thompson
M D 67 pages Charles C Thomas Publisher Springfield Ill 1954
Price \$3

In this competently printed and bound monograph the subject of hypoglycemia and hyperinsulinism is briefly reviewed from the view point of the practicing physician. Theory is presented only to an extent necessary to explain the background of certain viewpoints of etiology, diagnosis and treatment. A short historical review is followed by chapters discussing the causes, diagnosis and symptoms of hypoglycemia and hyperinsulinism. The therapy of these conditions is summarized and there is an extensive bibliography.

The fact that hypoglycemia may be present without symptoms and that the true hypoglycemic syndrome may be present without an excessively low blood sugar value is emphasized throughout the book. Of particular interest is a section discussing the evidence for the presence of a hyperglycemic glycogenolytic factor (HGF) which is believed to be produced by the alpha cells of the pancreas and is considered to be a second pancreatic hormone acting as an insulin antagonist. The section concerned with the differential diagnosis of the hypoglycemic syndrome is of practical importance and outlines several laboratory procedures which can easily be performed in any well equipped hospital laboratory. The brief reference to the possible use of insulin as a therapeutic agent of functional hypoglycemia is of provocative interest.

The chief criticism of the book is in its brevity. While the volume serves as an excellent short review of its subject bringing the reader up to date with current concepts, it seems to leave many questions only partially answered. It is well written throughout and should be a useful addition to the library of the general practitioner, the internist or the resident in internal medicine.—JOHN E GORMAN *Comdr (MC) USN*

MYOCARDIAL INFARCTION by Irving S Wright M D Charles D Maple
M D and Dorothy Fabs Beck Ph D 656 pages illustrated Grune &
Stratton Inc New York N Y 1954 Price \$8.50

This book is a detailed report of an extensive study instituted to determine the influence of anticoagulants on coronary thrombosis. In a specific investigative plan set up by the Committee on Anticoagulants of the American Heart Association 1031 cases of myocardial infarction comprised the study. Of these 442 were control subjects and 589 were treated with anticoagulants. Sixteen hospitals and nearly 100 medical investigators throughout this country participated.

Considerable data relating not only to anticoagulants and their use but also to many other aspects of myocardial infarction were accumulated during the course of the study. This material has been exceptionally well correlated. There is much detail with numerous charts. The

first four chapters present the background origin purpose and plan of the investigation and the composition of the sample cases. The remaining nine chapters deal with the clinical picture course of the illness findings management thromboembolic and hemorrhagic complications and conclusions. An excellent description of the anticoagulant regimen with details of usage is to be found in the appendix. The book is well indexed and there is an extensive and useful bibliography.

The original premise that anticoagulants might favorably influence the outcome of an acute attack of myocardial infarction is reported as confirmed because in this series 23.4 percent of the controls died in contrast to 16 percent in the anticoagulant treated groups. However many competent investigators and cardiologists are not in full agreement with all of the conclusions presented in this report. In particular there is considerable disagreement with the conclusion that virtually all myocardial infarction patients who survive long enough for hospitalization and diagnosis should receive anticoagulant therapy. Nevertheless the extensive material on myocardial infarction which is so well organized well written and clearly presented should be of distinct value to all those who may have to deal with the disorder.

—JOHN H. WARD, J. Cpt (MC) USN

GALEN OF PERGAMON by George Sarton 112 page University of
Princeton Law Center 1954 P \$2.50

This is a comprehensive and concise essay on Galen one of the greatest physicians of all times. The author is an eminent historian of science who has succeeded in recreating the world of Galen. He draws from diverse disciplines such as general history architecture and history of philosophy and medicine to enrich the picture of his subject.

Galen's career and personality are presented in their relation to the general cultural history of his time. An extraordinarily productive person in addition to being a busy and successful practitioner of medicine he was an astute observer and investigator a famous lecturer in his day and a prolific writer. In his life span of 70 years he wrote several hundred books and treatises covering practically the whole range of human knowledge including the first autobiography of any note. His influence was enormous. Some of his writings formed an integral part of the medical curriculum for the next 1500 years.

Today some of Galen's statements appear infantile in the light of our more mature knowledge but even genius has its infancy. Are not Galen and his theories a symbol of greatness of the Greek spirit which did not know as yet a compartmentalization of knowledge and speculation? Has not the division of science from philosophy and theology proved to be fateful in our days? The reader will have to decide for himself. Dr. Sarton in his excellent little book has provided a guide.

—HELMUTH SPRINZ, Lt Col MC USA

A TEXTBOOK OF CHEMISTRY by Stella Goostray R N B S V Ed 3rd
J Rae Schuenck A B Ch E 7th edition 426 pages illustrated
Macmillan Co New York N Y 1954

As in previous editions of this text the authors have presented the fundamentals of chemistry in a popular and interesting manner. The purpose has been to discuss material that would be of service to the nurse not only in the practice of nursing but also in her understanding of the basic sciences and related phenomena. In addition to achieving this goal the authors have produced a text which should be materially useful in medical technicians courses.

The subject matter has been well chosen and a factual account of the important aspects of inorganic organic and biochemistry presented in a manner that can be easily assimilated by the beginner. The surveys which precede each chapter should aid the student to grasp the material which is presented therein. The summaries and questions following each chapter are excellent. To the beginning technician the chapter on Mathematics of Chemistry might be somewhat confusing because of its brevity. The added chapter on radioactivity is oriented and the material is presented in a manner within the grasp of the beginner.—IRVING GRAY Lt Col MSC USA

FACTORS AFFECTING THE COSTS OF HOSPITAL CARE Volume 1
Financing Hospital Care in the United States edited by John H. Hays
pages illustrated The Blakiston Co., Inc New York N Y 1954
Price \$4

This volume is one of three presenting the detailed findings and recommendations of the Commission on Financing of Hospital Care. Organized in 1951 under the sponsorship of the American Hospital Association the Commission had as its objective to study the costs of providing adequate hospital services and to determine the best terms of payment for such services.

This book gives the results of a detailed and thorough investigation of factors affecting the rise in hospital expenditures which account for the increase in quantity and quality of hospital services in this country. The influence of expanded services as well as the higher costs of labor and materials were considered along with possible means of keeping costs to a minimum without reducing the quality of services. Detailed studies of costs in the nonprofit general hospitals were made but the findings discussions and recommendations made are applicable to other type hospitals. The growth in complexity of hospital services the changes in hospital financing the increase in numbers and utilization of facilities the growth of outpatient services and many other factors are reported in detail. Among the other factors are the influence of inflation increase in population, increased rate of admission and increased payrolls. The influence of management efficiency and decrease in length of patient stay in reducing costs of hospitalization are also discussed. Excellent detailed statistical charts are given and there

together with the final summary and recommendations give the reader a quick grasp of the exhaustive study made and the problems still to be solved

With this volume hospital administrators have an excellent opportunity to learn what leaders in the field consider to be the major hospital financial problems how these problems developed and their significance in various hospitals At the same time one learns the approach that has been taken by various hospital groups to overcome and hold to a minimum the effect of the problems discussed

—JAMES T MCGIBONY C I MC USA

THE EPILEPSIES by H Ga t L Am r L ctur S i P bli ti
N mbe 204 A M gr ph Th B e i D of Am r an
L ctur n S g ry d t d by M ch I E D B J y M D d R G l
Spurl g M D 150 p g ll at ted Ch l C Th m s Publ h r
Spr gf ld, Ill 1954 P \$4 75

This comprehensive monograph contains much original material and a review of the literature Reviewing and summarizing the subject of the electroclinical correlations of epilepsy in a simple and didactic manner the author has given full credit to the contributions of his predecessors and contemporaries

The present knowledge of the epilepsies is contained in this ready reference for clinicians and students and it contains additional information needed by those seeking board certification the location of which would require many hours of searching in the literature The originality in thinking and brilliance in writing has been ably preserved in the translation

This monograph contains what the average doctor wants to know about epilepsies This book is well indexed and adequately illustrated and contains chapters on electroclinical classification clinical analysis physiologic interpretation etiology anatomic pathology diagnosis and treatment It fulfills the purpose for which it was written and should be in every library and carefully read by those who treat patients with the convulsive disorders — JOSEPH J HORNISHER Col MC USA

UNIVERSITY EDUCATION FOR ADMINISTRATION IN HOSPITALS A Rep t
f th C mm son o U r ty Edu ion n H pital Adm tr t
1954 P blish d by Am n Coun l Ed c i W hington D C
1954 199 p g P t \$3

There are 13 existing degree granting university graduate programs in hospital administration, all but one of which have been established in the last 10 years Because this field of education is new there is but little uniformity in the programs and many are still frankly experimental An independent commission was created to make an appraisal of these activities with establishment of criteria for future planning This book which is sharply critical of many of the existing programs presents the report of the commission It is almost certain to give rise to controversy

The Commission charges that there is no common foundation required for graduate work in hospital administration. Too many students are being accepted merely on the basis of experience in hospitals. These include ministers, doctors, nurses, military career officers, psychologists, and social workers. Physicians and nurses will not like the Commission's recommendation that only those persons thoroughly prepared by business and management courses as undergraduates be accepted as graduate students in hospital administration. Acknowledging that such policy would rule out physicians and nurses, the report states that these groups are not prepared by their medical or nursing training alone to participate in advanced work in administration.

The book is well organized and is well documented with 20 supporting tables. Of little interest to other than those associated with training programs for hospital administrators, it could well be regarded as a definitive guide to education in that field.

—WILLARD C. GALAIS *Capt (USC) USA*

CYSTIC FIBROSIS OF THE PANCREAS IN INFANTS AND CHILDREN by Charles D. May M.D. *American Lecture Series, Publication Number 234*. A Monograph in *American Lectures in Pediatrics*. Edited by John A. Anderson M.D. 93 pages illustrated. Charles C. Thomas Publisher, Springfield, Ill. 1954. Price \$3.

This complete and well referenced monograph contains a great deal of information of value to physicians concerned with the diagnosis, treatment, and long-term care of patients with cystic fibrosis of the pancreas. Practicing pediatricians will find noteworthy the three chapters on clinical manifestations, diagnosis, and treatment. Students in this field will be particularly interested in the chapters on pathogenesis and physiologic consequences.

This is a readable, well printed book with clear illustrations that are pertinent and fully explained. The case reports cover all the different manifestations of the disease. The index and bibliography are excellent. This is a worthwhile publication by one of the foremost authorities in the field and has a definite place as a reference book in any up-to-date medical library. —WILLIAM NEIRAK, *Lt. Col. (MC) USA*

THE PRACTICE OF SANITATION by Edward Scott Hopkins and Wilmer Henry Schuler. 2d edition. 466 pages illustrated. The Williams & Wilkins Co., Baltimore, Md. 1954. Price \$8.

This volume is written "as a guide in environmental sanitation procedures for the training of physicians seeking to become health officers, nurses, sanitarians, and students of sanitary engineering, and to bring together in one volume the pertinent facts comprising sanitation practice as it is today in the United States. It should therefore be judged in this light and not as a self-sufficient text."

This edition has expanded its former 14 chapters into 23 and some of the deficiencies of the first edition have been corrected. Reference

citations have been increased and the problems of water supplies and sewage disposal have been subdivided so that the approach to their solution in urban and rural areas are discussed separately

The first five chapters concern the fundamental concepts and principles and include an early discussion of administrative practice. The ensuing chapters are simply and conveniently organized and touch on all the essentials of sanitation practice. Added chapters on air pollution, housing, industrial sanitation, public transportation, and camps and motor courts enhance the value of this book.

On the whole, this book will be valuable to a variety of groups and in particular to the young medical officers on duty at stations where there is no experienced preventive medicine officer. It is written in a clear, concise, and straightforward style, is well illustrated, and can provide the basis for organized extra instruction for informal study and as a ready reference for specific items of information.

—ADAM J. RAPALSKI C L MC USA

SELECTED WRITINGS OF FLORENCE NIGHTINGALE compiled by Lucy
R d g l y S y m M A S R N 396 p g Th M mullan Co N w
Yo k N Y 1954

This interesting volume fits best in the classification of historical reference books—the only one on this subject available. The book is a collection of writings that deal with nursing, honoring the centenary of Miss Nightingale's departure to nurse in the Crimean War, and bringing to the public a better, deeper understanding of the profession she pioneered. The format makes reading easy, and the preface to each work is especially valuable. This book is one that should be included in the library of every school of nursing.

The writings cover a period of 36 years and are arranged in chronological order without regard to importance. Each work is prefaced by an explanation of the circumstances concerning the writing and its special significance. A majority of the works are unknown to modern readers, some having been written originally for British Government publications or for Congresses. There is a suggested additional reading list whereby the more avid reader can compare the present version with the original works.

This volume is a valuable source of historical material, as a reference for comparison with present day thought and use.

—GLADYS E. DVORAK Comdr (NG) USN

FIXED PARTIAL PROSTHESIS by Joseph E. Ewing D D S 208 p g s
482 illustrations L & F b g Phil d lphi Pa. 1954 Pr \$6

This book fulfills the need for an accurately illustrated summary of techniques on the subject and is a step-by-step guide to all types of preparations of fixed restorations. The author covers the subject completely, beginning with a clear and concise conception of the biologic

as well as the mechanical requirements. In an easy to read outline he devotes the first five chapters to the all important preliminary requirements examination both radiographic and clinical, with each oral condition graphically illustrated indications and contraindications for fixed partial prosthesis and the important consideration of adequate oral treatment prior to the technical construction phase.

All types of abutments and retainers are logically discussed with each step of the procedure graphically illustrated. Concise explanatory notes accompany each step and illustration. Throughout the entire book the material is presented without the use of lengthy superfluous text and is well organized.

The more recent acceptance of the hydrocolloid technic for indirect inlays and fixed bridges is dealt with in a complete chapter listing 39 steps to observe. Investing casting and soldering are outlined with well chosen illustrations of both correct and incorrect procedures. These are well presented provided the reader uses the same technic and materials for investing and wax elimination. The author uses the thermal expanding technic and does not mention the hygroscopic technic. The final chapter deals with case design illustrating basic designs which can be used in many combinations.

The author has drawn freely from many sources including current literature and has given full credit in his bibliography of 33 references. This is an excellent and practical ready reference for advanced dental students and dental practitioners.—THEODORE E. FISCHER, Col. USAF (DC)

BIOLOGY by *Claude A. Villee* 2d edition 670 pages illustrated W. B. Saunders Co. Philadelphia Pa. 1954 Price \$6.50

This textbook is the outgrowth of the author's teaching experience at the University of North Carolina and was written to convey the concept that biology is a science which deals with all of the diverse aspects of the myriad forms of life. In this revised second edition he has emphasized the dynamic and experimental aspects of biology. The extent to which modern biologic research has succeeded in explaining the phenomena of life including the comparative and evolutionary aspects of biology and the physiologic and chemical facets of life have been stressed. This is a valid approach for the parts of biology most interesting to a beginning student and most useful as a part of a general education are those that explain how organisms particularly human beings function and how they came to be as they are.

The author has successfully presented the information a student should acquire in a college course in biology without overloading him with facts. The book opens with a new discussion of the scientific method the design of experiments and the sources of scientific information. Part I has been completely rewritten to integrate the discussion of basic physics and chemistry with their biologic applications. A new chapter concerns cellular metabolism in which the many similarities

between bacterial green plant and animal cells at this fundamental level are emphasized. The information on the enzymes and their properties has been greatly expanded and an account of the enzymes reactions which provide the cells with the energy for all their diverse activities has been added as well as a chapter on biologic interrelationship describing the evolutionary and ecologic relations of plants and animals. Included are the newer concepts on insect metamorphosis colonial insects and insect behavior. The chapters on infectious diseases human inheritance reproduction and embryonic development are concise and present the newest information in these subjects.

This book is authoritative and well written. It is intended as an introductory text in a course in college biology; however, it should prove to be a valuable sourcebook for teachers and researchers in the health sciences. —MAXWELL DAUER, Lt Col MSC USA

COLOR ATLAS OF PATHOLOGY V l m 2 Prepar d u d th usp f
th U S Nav l M d l S hool of th Nat l N val M d c l C r
B th d Md ill trat d w th 1 032 f gur l 343 pl t
450 p ge J B L pp tt Co Phil d lphia P 1954 P i \$20

In this second volume the pathology of the endocrine system (including pituitary thyroid parathyroid adrenals and pancreas) female diseases and obstetrics (including reproductive organs and breasts) male genital tract and skin is presented. The material is as in the previous volume contributed from numerous sources including the U S Naval Medical School Georgetown University Medical School and the Armed Forces Institute of Pathology. A third and final volume of this system of pathology is currently in process of compilation.

The original plan in preparing these three volumes of pathology in color atlas form was to give the medical profession a comprehensive concise and realistic source of reference with reproductions in full color which would present to the student the clinician and the laboratory diagnostician a readily usable and adequate standard of comparison as a guide for study of gross and microscopic findings. It is believed that this objective has been attained beyond all expectation in this second volume.

The photography of the gross specimens and the low and high-power microscopic fields is excellent. The case histories are concise and to the point and the descriptions of the gross and microscopic pictures are easily followed and in most cases show the features described with remarkable clarity. It is believed that these three volumes are a must for pathologists resident in pathology and many clinicians. These volumes are pioneers in this particular field and have set the standard that will materially change the trend in presenting information in pathology in the future. —DWIGHT M. KUHN, Col MC, USA

New Books Received

Books received by the *U S Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be selected for review in a later issue.

FLIGHT SURGEON'S MANUAL Air Force Manual Number 160-5 Department of the Air Force Washington D C 712 pages illustrated Air University U S Air Force School of Aviation Medicine Randolph Air Force Base Randolph Field Tex July 1954

OPERATIVE ORTHOPEDIC CLINICS by Lewis Cozen M D F A C S Assistant Professor of Orthopedic Surgery Colley of Medical Surgeons Los Angeles Calif Staff Orthopedic Hospital, Wadsworth General Hospital Veterans Administration Los Angeles Central Hospital Cedars of Lebanon Hospital Los Angeles Tuberculosis Control Clinic Los Angeles Consultant United States Public Health Service Member American Academy of Orthopedic Surgeons and Alpha Omega Chapter of the Chief of Staff Orthopedic Hospital Los Angeles Attending Orthopedic Surgeon Los Angeles Hospital Los Angeles Orthopedic Consultant, Department of Public Health State of California Member American Association of Orthopedic Surgeons in Collaboration with Paul H. McMaster M D F A C S Clinical Professor and Acting Head of Department of Orthopedic Surgery University of California at Los Angeles Medical School Senior Consultant in Orthopedic Surgery U S Veterans Hospital, West Los Angeles Attending Orthopedic Surgeon Hospital of the Cedars of Lebanon Children's Hospital Cedars of Lebanon Hospital Hollywood Presbyterian Hospital and St John's Hospital Orthopedic Consultant to Harbor General Hospital Member American Orthopedic Association and American Academy of Orthopedic Surgeons 379 pages 116 illustrations J B Lippincott Co Philadelphia Pa 1955 Paper \$10

MEDICAL TREATMENT OF MENTAL DISEASE The Toxic and Organic in Psychiatry by Daniel J. McCarthy M D LL D Consultant Psychiatrist Philadelphia General and Norristown State Hospitals Executive Trustee University of Pennsylvania formerly Medical Director of Fairmount Farm and Rosemeath Farm and the Neuropsychiatric Service St Agnes Hospital Philadelphia Pa and Lecturer in Medical Jurisprudence University of Pennsylvania and Kenneth M. Coyle M D Neuropsychiatrist Wilmington General Hospital and Consultant Psychiatrist St Francis Hospital Wilmington Delaware formerly Director Wernersville State Hospital and member Psychiatric Staff Philadelphia General and Jefferson Hospitals and Instructor in Psychiatry Jefferson Medical College with sections by eight contributors 653 pages illustrated J B Lippincott Co Philadelphia, Pa 1954 Price \$12

AEDOPHILOPHATOSIS by Rodney Masingot M D F R C S Lecturer in Surgery to the Royal Free Hospital London and to the National Cancer Hospital London with contributions by 24 American and British authors 195 pages 1594 illustrations in 710 figures 11 plates Appleton-Century Crofts Inc New York, N.Y. 1954 Price \$24

ADVANCED SURGERY OF CATARACT by *Dan I B K* by M D F A C S
 P f or Eme itu of Ophth lmology New Yo k Un ersity Coll g of
 Md e (F m Ch irm n f th Dep rtm t) Surg o D p tm at
 of Ophth lm logy U v r ty H pital C lts g S ge M h t t n
 Ey E and Thr t H pit l N w Yo k Ey nd Ea Infrm ry St
 Clare Ey H pital Ey D pa tm t N w R ch lle H pital 271
 pages 138 f gur nd 96 ll tr ts (22 pl t) in f ll l J B
 L ppinc tt Co Ph l d lph P 1955 P i \$27

DOCTORS IN THE SKY Th Story of th A Md l A so iat by *R bert*
 J B fo d M D C l n l Md l C rp U ted Stat A Fo
 326 p g ill tr t d Ch l C Th m P hl h Sp gf ld ill
 1955 P e \$8 75

HYPEROSTOSIS CRANII St w t M l Syndr m Metabolic Cra opathy
 Mrgag s Sy d me St w rt M r l M re Sy drome (Rit o) L Syn
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 f R d l gy W hngt U r ty S h l of M d c F m r Direct r
 f The Edw rd Mall krod t l t tu f R d l gy St L Mo 226
 page ill tr t d Ch rl C Th ma P hl h r Sp gf ld ill 1955
 P \$10 50

PERIPHERAL VASCULAR DISEASES 2d dit o by *Edg V All* B S
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 Graduate S h l U ty of Mi ta w th A c t n th May
 Cl d M y F und t n 825 page 316 ill stratio s 7 in color
 W B Sau der C Ph l d lph P 1955

SURGICAL NURSING by *Eld idg L Elia* M D SC D F A C S
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 U sity Sch l l Nur g Sp o of Ope ti g R m Ho pital
 f th Un v r ty f P n n ylva 10th ed t n 754 pag s 329 ill
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 d lph P 1955 P i \$4 75

DISEASES TRANSMITTED FROM ANIMALS TO MAN by *Thoma G H II*
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 717 p ge ill strat d Ch l C Th m P bl h Spri gf ld ill
 1955 P \$12 50

ESSENTIALS OF MEDICINE The Art and Science of Medical Nursing by *Charles Phillips Emerson Jr* M D Associate Professor of Medicine Boston University School of Medicine Member Robert Dawson Evans Memorial Laboratory Visiting Physician and Director of Clinical Laboratories Hematology Clinic and Radioisotope Division Massachusetts Memorial Hospitals Consultant in Hematology U S Public Health Service Hospital Brighton and Attending Physician Veterans Administration Hospital Boston and *Jane Sherburn Bragdon* R N B S Associate Director School of Nursing Massachusetts Memorial Hospitals and Clinical Assistant in Medical and Surgical Nursing Boston University School of Nursing 17th edition 922 pages 268 illustrations including 19 subjects in full color J B Lippincott Co Philadelphia Pa 1955 Price \$4.75

TEACHING MEDICAL AND SURGICAL NURSING by *Jane Sherburn Bragdon* R N B S Associate Director School of Nursing Massachusetts Memorial Hospitals and Clinical Assistant in Medical and Surgical Nursing Boston University School of Nursing Co-author of Essentials of Medicine by Charles P Emerson M D and Jane S Bragdon R N and *Lillian A Sholtis* R N B S M S Consultant in Medical and Surgical Nursing Bryn Mawr Hospital School of Nursing formerly Assistant Professor of Surgical Nursing Yale University School of Nursing Supervisor of Operating Rooms Hospital of the University of Pennsylvania Co-author of Surgical Nursing by Eldridge L Eliason M D L Kraefer Ferguson M D and Lillian A Sholtis R N 70 pages J B Lippincott Co Philadelphia Pa 1955 Price \$2

ANALYSIS OF DEVELOPMENT edited by *Benjamin H Wilber* Professor of Zoology Johns Hopkins University Baltimore Md *Paul A Weiss* Member Rockefeller Institute for Medical Research New York N Y formerly Professor of Zoology University of Chicago Chicago Ill and *Viktor Hamburger* Professor of Zoology Washington University St Louis Mo 735 pages illustrated W B Saunders Co Philadelphia Pa 1955

REACTIONS WITH DRUG THERAPY by *Harry L Alexander* M D Emeritus Professor of Clinical Medicine Washington University Medical School Former Editor of the Journal of Allergy 301 pages illustrated W B Saunders Co Philadelphia Pa 1955

THE NURSERY SCHOOL A Human Relationships Laboratory by *Katherine H Read* School of Home Economics Oregon State College 2d edition 297 pages illustrated W B Saunders Co Philadelphia Pa 1955

DISORDERS OF CHARACTER Persistent Enuresis Juvenile Delinquency and Psychopathic Personality by *Joseph J Michaels* M D Boston Mass 148 pages Charles C Thomas Publisher Springfield Ill 1955 Price \$4.75

INTEGRATION OF RELIGION AND PSYCHIATRY by *W Earl Biddle* M D F A P A Clinical Director Men's Division, Philadelphia State Hospital Philadelphia Pa Formerly Assistant Superintendent of Wernersville State Hospital Wernersville Pa 171 pages The Macmillan Co New York N Y 1955 Price \$3.75

INTRODUCTION TO THERMODYNAMICS OF IRREVERSIBLE PROCESSES by *I Prigogine* D Sc Professor Faculty of Science University of Brussels Brussels Belgium American Lecture Series Publication Number 185 A Monograph in American Lectures in Biochemistry and Biophysics edited by *W Bladergroen* Ir (Delft) M A Ph D Sandoz Ltd Basle Switzerland 115 pages illustrated Charles C Thomas Publisher Springfield Ill 1955 Price \$4.75

- HANDBOOK OF TREATMENT** by *Hold Thomas Hyma* M D Author of
Integrated Practice of Medicine and Handbook of Differential Diagnosis
511 pag J B Lippincott Co Philadelphia P 1955 Price \$8
- THE COAGULATION OF BLOOD METHODS OF STUDY** edited by *Leandro*
M. Tocantins M D Prepared with the help and under the supervision
of the Panel on Blood Coagulation of the Committee on Medical and
Surgery of the National Academy of Sciences National Research Council
240 pag illustrated Grune & Stratton Inc New York N Y
1955 Price \$5.75
- POTASSIUM METABOLISM IN HEALTH AND DISEASE** by *Holland L. Hollay*
M D Department of Medicine University of Alabama Medical-Dental
School Birmingham Ala and *Wane W. C. Lenn* Ph D Department
of Biochemistry University of Alabama Medical-Dental School
Birmingham Ala 131 pag illustrated Modern Medical Monograph
Number 12 Grune & Stratton Inc New York N Y 1955 Price \$4.50
- MOSQUITOES Their Bionomics and Relationship to Disease** by *William R. Hor*
William A. Oelert Ph D of Entomology University of Illinois 723
pag The Ronald Press Co New York N Y 1955 Price \$16
- LANGUAGE AND SOCIETY** by *Joseph B. Peck* Editor of Sociology and
Anthropology New York University Doubleday Shurtleford Study in Sociology
SSS 8 Consulting Editor *Charles H. Page* Professor of Sociology
Smith College 66 pag Doubleday & Company Inc Garden City
N Y 1955 Price \$0.95
- SOCIAL ORGANIZATION** by *Scott A. G. Reber* Director Laboratory
of Urban Culture and Social Change Doubleday Shurtleford Study in Sociology
SSS 9 Consulting Editor *Charles H. Page* Professor of Sociology
Smith College 68 pages Doubleday & Company Inc Garden City
N Y 1955 Price \$0.95
- ADVANCES IN PEDIATRICS** Volume VII edited by *S. Z. Levine* Cornell
University Medical College New York N Y Assistant Editor *John*
A. Anderson Stanford University School of Medicine San Francisco
California *Magister Dan* Cornell University Medical College New York
A. A. Wiley Washington University of Cincinnati College of Medicine Cincinnati
Ohio *Myron E. Wegman* Pediatric American Society Bureau of World
Health Organization Washington D C and *Warren E. White* Chief
of the Hospital Columbia Ohio 351 pag illustrated The Year
Book Publishers Inc Chicago Ill 1955
- STRESS SITUATIONS** edited by *Samuel L. Serman* M D Medical Director
North Shore Health Research Waverack Hill Clinical Assistant Professor
of Psychiatry University of Illinois College of Medicine 144 pag
J B Lippincott Co Philadelphia P 1955 Price \$3
- FINANCING HOSPITAL CARE FOR NONWAGE AND LOW INCOME GROUPS**
Volume 3 of FINANCING HOSPITAL CARE IN THE UNITED STATES
edited by *Henry B. A.* 110 pages illustrated The Blackman Division
McGraw-Hill Book Company Inc New York N Y 1955 Price \$2.50
- REGIONAL ENTERITIS** Diagnosis and Therapeutic Considerations by
Fredrick F. Boy M D Professor of Clinical Surgery Tulane University
of Louisiana School of Medicine New Orleans La 84 pages
illustrated J B Lippincott Co Philadelphia P 1955 Price \$2.35
- AN HISTORICAL CHRONOLOGY OF TUBERCULOSIS** by *Robert M. B. K.*
M. D. F. A. C. P. A. Assistant Professor of Medicine University of
Oklahoma School of Medicine Oklahoma City Oklahoma Director of Tuberculosis
Control Center Oklahoma State Health Department 2d edition 125
pag illustrated Charles C. Thomas Publisher Springfield Ill
1955 Price \$3.75

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References to published literature should be listed at the end of the article in the numerical order in which they are cited in the author's text Care and accuracy in their preparation will expedite publication of the article Following are correct examples of reference

Heming A Young M J Suchet J and Rowe A I P Penicillin content of blood serum after various doses of penicillin by various routes
Lancet 2 (1-63) Nov 11 1944

Cabot R C Permcion and secondary anemia chlorosis and leukemia
In Oler W (editor) *Modern Medicine* 31 edition Lea & Febiger Philadelphia Pa 1944 Vol 5 pp 33-100

FIGURES AND TABLES

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(See title of back cover)

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UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON 1955

Monthly Message

It is with great pleasure that we welcome Dr. Edward Harvey Cushing as Deputy Assistant Secretary of Defense for Health and Medicine. Dr. Cushing has been an alternate member of my Civilian Advisory Council for the past year and served as Acting Deputy during my five weeks' absence in the Far East last fall. He commenced his official duties on 3 March 1955 and brings to the office a wealth of experience in clinical medicine, research, active duty in both the Army and Navy, and in the knowledge of government medicine.

Dr. Cushing received an A. B. from Yale University in 1919 and an M. D. from Harvard in 1923. Following internships and residencies in the Presbyterian and Bellevue Hospitals in New York and Lakeside Hospital in Cleveland, he entered into the active practice of medicine in the latter city in 1928 and became Associate Clinical Professor of Medicine at Western Reserve. He served in 1916 in the Field Artillery in the Mexican Border Campaign and in World War I during World War II he served as commander and captain in the Medical Corps, U. S. Naval Reserve from 1940 to 1946, receiving the United States Typhus Commission Medal. From 1946 to 1952 he was Assistant Chief Medical Director of the Veterans Administration in charge of research. He is a member of the American Medical Association, the American College of Physicians, the American Clinical and Climatological Association, and other medical organizations.

Dr. Cushing's association with this office will add much to its potentialities.

Frank B. Berry
FRANK B. BERRY, M.D.
Assistant Secretary of Defense
(Health and Medical)

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Foreword

The *United States Armed Forces Medical Journal* is the medical journal
 containing information of interest and profit to the medical
 personnel of the Department of Defense. The Assistant Secretary of Defense
 (Health and Medical) and the Surgeon General of the Army
 Medical Staff and the Medical Service Corps of the Army
 Corps of Engineers and the Veterinary Corps of the Army and the
 United States Navy and the United States Air Force submit
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FRANK B. BERRY, M.D.

Assistant Secretary of Defense (Health and Medical)

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UNITED STATES ARMED FORCES MEDICAL JOURNAL

Volume VI

May 1955

Number 5

THE PROBLEM OF PULMONARY INSUFFICIENCY IN DISABILITY RATING

A Critical Evaluation of the Need for a
Physiologic Classification

JAMES C SYNER *Captain, MC USA*

CHARLES S CHRISTIANSON *Lieutenant Colonel MC USA*

THE QUANTITATIVE evaluation of pulmonary function by use of physiologic tests is becoming increasingly important. Numerous methods are available and we have discussed some of the procedures in a previous article.¹ The application of laboratory studies to supplement clinical evaluation in providing an objective appraisal of pulmonary disability is particularly important in the military service. Evaluating the subjective complaint of "dyspnea" in terms of degree of disability by history, physical examination, and roentgenograms of the chest can prove very controversial.

In military medicine we are continually confronted with two major responsibilities in the evaluation of patients with diseases of the chest: (1) The profiling of persons following illness or on roentgenographic detection of abnormalities for physical fitness for either limited or general duty; and (2) the profiling of persons as to their physical fitness who are presented to physical evaluation boards for decisions regarding their type and degree of disability for retirement compensation.

The problem of determining these situations realistically and accurately is a tremendous one, and in the interests of the armed services and the person involved a full measure of accurate and intelligent work must be done. The use of pulmonary function tests as aids and as supporting evidence in these proceedings, however, has been very limited. As a result the accumulation of controlled, organized, and standardized data has not been accomplished. We have been unable to find reliable tables for the disability profile of pulmonary insufficiency based on physiologic data.

It has been our experience and that of many other workers in the field¹⁻³ that physical examination and chest roentgenography are limited and often unreliable in estimating the status of pulmonary function for disability rating. A patient with diffuse radiologic densities for instance may have little or no disturbance in pulmonary function. Conversely patients with relatively little or no radiologic evidence of disease may have severe pulmonary insufficiency or even complete pulmonary disability. Far too often however, the anatomic status is considered first last and only. Once the anatomic status of the respiratory apparatus has been defined all kinds of conclusions are drawn regarding its functional status. Usually such an evaluation stands as the final evidence for retirement induction general or limited duty status the type of surgical or medical treatment indicated and the diagnosis of disease. An organized study to investigate this problem is essential in order to meet the responsibilities of the medical mission in our country's defense effort.

One reason for the limited use of pulmonary function studies has been the wide variation in results obtained in normal persons. This has been a source of frustration and discouragement to many physicians. Only now are we appreciating that much of this was due to a lack of standardization in equipment and methods. Any program of study for working out this necessary classification of pulmonary insufficiency would have the task of determining the specifications and standardizations of procedures for use in the armed services.

Another reason for variation has been the tendency in the past to evaluate with a single test a group of supposed normal persons as judged by history physical examination and routine roentgenograms of the chest. No single test however can adequately define the status of pulmonary function and a group of tests is required to screen the various mechanisms which make up integrated function. The combination of tests which provide the most accurate and adequate screening of functional status has never been defined nor has any large well controlled study been carried out to establish the answer. Reports appear in which small numbers of patients were studied but at this time the results cannot be regarded as an authoritative basis for disability profile duty disposition and retirement compensation of military personnel.

A third area of significant shortcoming has been the almost complete absence of information on the relationships and correlations between the findings of pulmonary insufficiency as revealed by physiologic testing and physical disability classifi-

fication Adequate controlled study, definition of concepts, and synthesis of new ideas is most certainly needed

CASE REPORTS

The following case reports illustrate typical situations in which pulmonary function studies offered a significant contribution in certain problems by providing the evaluation board with evidence for the best possible decision Cases of this type are of common occurrence and provide for a large part of the function studies carried out in the medical chest clinic at this hospital

Case 1 A 60-year old man was hospitalized for medical evaluation prior to statutory retirement His chief complaints were exertional dyspnea on minimal activity easy fatigability and early morning productive cough The symptoms were described by the patient as slowly progressive and annoying Originally they were thought to represent manifestations of arteriosclerotic heart disease and myocardial insufficiency He was studied in the cardiac clinic but his cardiac status was considered normal During fluoroscopic examination limitation of the diaphragms was noted and he was referred to the medical chest clinic for further evaluation The results of the pulmonary function studies are shown in table 1 and are indicative of a moderate degree of pulmonary insufficiency of a ventilatory type primarily obstructive in nature with a significant degree of emphysematous decompensation This conclusion was supported by the following changes

- 1 Vital capacity was slightly reduced to 85 percent of predicted normal This single conventional determination however provided little if any insight into the nature and degree of the physiologic abnormality in this patient

- 2 The ratio of the residual air to total lung volume was 45 percent a significant increase over the predicted normal of 30 percent This indicated a hyperinflation of the pulmonary volumes which was compatible with a moderate degree of emphysematous decompensation

- 3 The maximum breathing capacity was diminished to 74 percent of predicted normal Of equal importance was the character of the respiratory tracing obtained during the test performance There was a significant shift of the midpulmonary position to a maximum inspiratory level demonstrative of the air trapping and hyperinflation that are characteristic of obstructive emphysema

- 4 The character of the helium dilution curve indicated a delay in the intrapulmonary mixing that is characteristic of the defect in distribution associated with the ventilatory impairment of emphysema

5 The air velocity index of 0.87 further substantiated the findings and conclusions of an obstructive type of pulmonary insufficiency

TABLE 1 Pulmonary function studies on 12 probable cases

Test procedure	P 1	P 2	P 3	P 4
Vital capacity				
Predicted	4 100	4 800	4 170	4 700
Observed	3 400	5 000	4 900	5 000
Residual				
Predicted	1 900	1 400	1 700	2 000
Observed	2 800	1 450	1 860	1 830
R				
Residual				
% 100	45 p	23 pe	26 pe	27 pe
Total lung volume				
Maximum breathing capacity				
Predicted	110 L/m	160 L/m	136 L/m	146 L/m
Observed	78 L/m	158 L/m	134 L/m	126 L/m
Dyspnea	87 pe	95 pe	94 pe	92 pe
Volume equivalent for oxygen	4 l	3.2	2.4	2.6
Expiration	1 300	1 680	1 500	1 600
Inspiration capacity	2 100	3 300	2 400	3 400
Total gas volume				
Predicted	5 900	6 250	6 500	6 700
Observed	6 310	6 360	6 700	6 730
Arterial O ₂ saturation			R 96 F 98 pe	

Dyspnea B h g q me l 37 C % 100

Maximum breathing capacity

Volume equivalent for oxygen Volume l 37 C

Oxygen percentage l STPD

(STPD) Standard Temperature Pressure Dry Air

Comment The addition of these pulmonary function tests to the study and evaluation of pulmonary emphysema provides a presentation of the patient's symptoms in terms of the functional dynamics. These tests permit a clearer, more emphatic concept of the disease process and associated impairments and bring to light the error of confusing cardiac and pulmonary insufficiency. Their results emphasize that a serious degree of pulmonary insufficiency can be a major problem in persons coming before physical evaluation boards. They provide a means for rating degrees of pulmonary disability and a basis on which standard

ization in the classification of disability can be made. Finally, the evaluation of the process serves the patient by bringing to light a pulmonary condition that can be as serious, as disabling, and as progressive as any other chronic disabling disease.

Case 2 This 21 year old man was hospitalized to determine whether or not he was fit for full military duty. His complaints were limited to the respiratory system and consisted of episodes of wheezing respirations, cough and shortness of breath. He stated that this condition had been present for several years and was aggravated by cold, damp weather and seasonal changes. He had been extremely active in professional sports, was a topnotch performer and had been able to maintain a position on a professional ball team. Findings of his physical examination were normal at the time of admission and remained so throughout his hospital stay. A roentgenogram of the chest was normal. Pulmonary function studies were carried out and the results which were entirely within normal limits are shown in table 1. There was no evidence of emphysematous decompensation as indicated by the normal residual air volume of 1456 cc. which represented 23 percent of the total lung volume. An adequate ventilatory capacity was indicated in a maximum breathing capacity performance which was 92 percent of the predicted normal. The absence of pulmonary air trapping and respiratory outflow obstruction was indicated in the timed vital capacity study which demonstrated that 96 percent of the vital capacity was displaced within the first three seconds. The character of the respiratory tracing showed a normal inflow outflow pattern with no disturbances of rate, rhythm or stigmata of expiratory delay.

Comment. The important features of normal residual air volume, adequate maximum breathing capacity, normal timed vital capacity relationships, and absence of respiratory outflow obstruction proved of fundamental value in the proper disposition of the patient to full military duty. In the presence of any significant bronchospastic disease, characteristic changes in the dynamics of ventilatory function can be expected. When the problem has been chronic, abnormalities in the ratio of residual air to total lung volume are usually present. This latter finding is of particular value in the evaluation of the patient with asthma during a so-called asymptomatic period. Not only do such function studies aid in the proper evaluation of the immediate situation, but through careful follow up valuable information can be obtained regarding the natural history of various types of bronchospastic phenomena. To have standardized methods available for the quantitative evaluation of the subjective complaint of "dyspnea" would aid in the disposition of many types of "motivation" problems in the military service.

Case 3 A 34 year old man was admitted to determine his fitness for full military duty. The problem was one of diffuse bilaterally symmetrical pulmonary fibrosis residual from a nonspecific pneumonitis. About eight months before the present admission he had had a mild febrile illness characterized by dry cough of four days duration weakness elevation of temperature for three days and slight pain in the left side of his chest for two days. Ten days prior to the onset of this illness he had been working in a dusty attic. At the time of admission a roentgenogram of the chest showed a bilateral diffuse symmetrical nodular infiltration. An inclusive battery of laboratory studies failed to disclose a causative agent. Over a period of several weeks the patient improved in general well being and roentgenograms taken periodically showed resolution of the infiltrative process with residual diffuse bilaterally symmetrical fibrosis of a moderately severe degree. The patient was discharged to limited duty for a six months trial. At the time of admission for re-evaluation he was entirely asymptomatic and afebrile. Repeat roentgenograms demonstrated the previously described diffuse bilaterally symmetrical fibrosis to be essentially unchanged. Pulmonary function studies which were entirely normal are reported in table 1. Arterial oxygen saturation at rest and after heavy exercise was normal. The patient was returned to full duty.

Comment This case indicates that pulmonary function and anatomic changes demonstrated by roentgenograms of the chest may not run a parallel course. The experience is consistent with findings reported by Wright and Filley² who showed that pulmonary fibrosis even though extensive may be entirely benign in its effect on functional status. This officer was highly motivated to remain on active duty and possessed skills and training greatly needed in the defense effort. Before the results of his functional capacity were known there was considerable doubt as to whether or not he should be allowed to continue on active duty. In addition to clarifying the situation as to duty status essential information was documented about the disease process itself and the patient was reassured to learn that all measurable functions were within normal limits. Follow up evaluation will provide important data on the natural history of this disease process.

Case 4 A 27 year old man was admitted for cardiac evaluation because of complaints of chest pain hyperventilation dyspnea and awakening from sound sleep with sensations of suffocating. Cardiac evaluation was entirely normal. Because his respiratory rate at times ranged from 45 to 60 excursions per minute medical chest evaluation was requested. The history was negative for pulmonary disease but revealed episodes of anxiety psychosomatic symptoms and neurasthenia. Fluoroscopic examination showed normal excursions in both leaves of the diaphragm. Pulmonary function studies on several occasions demonstrated marked variation in values. After a satisfactory

patient physician relationship had been established the patient completed a performance with all values within normal limits. The character of the respiratory tracing indicated anxiety with characteristic irregular rhythm featuring numerous deep recurring sighing respirations. With final integration and evaluation of all available information the condition was considered as being primarily psychiatric and the patient was transferred to the psychiatric section for further evaluation and therapy.

Comment. The studies were of fundamental value in ruling out the presence of organic disease. They present a means for studying nonorganic types of dyspnea associated with anxiety and respiratory neurosis. Although the role of the respiratory system in the somatization phenomena is well recognized, clarification of the individual situation often poses a difficult problem. Furthermore, because of the serious implications of cardiac disease in young men, as much quantitative information as possible about physiologic status should be obtained. When anxiety is released through the respiratory system, certain aspects of pulmonary function studies can serve to document and demonstrate features which are not always well clarified by an interview or other conventional means. The character of the respiratory tracing is particularly valuable in providing a permanent record of the irregularities of rhythm in various testing periods, and as to how they correlate with mood swings. Knowledge of the variation in ventilatory values gained during separate testing periods is most valuable, for seldom will one encounter in organic disease the wide range of performance observed in functional problems. It is particularly interesting to observe changes in performance which are associated with an improving patient physician relationship.

SUMMARY

Problems relating to the evaluation of pulmonary function are an outstanding feature of military medicine. To adequately carry out this responsibility physiologic studies must be available to medical installations at all hospital levels.

Experience gained at this hospital leads to the conclusion that, at present, physiologic testing in diseases of the chest has not received its full share of attention and application. A controlled study is needed to determine the most effective manner in which available methods for pulmonary function study can be used in military medicine. An adequate battery of studies for screening should be defined. In particular, data on the physiologic classification of pulmonary disability should be accumulated and standardized to aid in disposition of military personnel either to duty or retirement with proper compensation for physical disability.

The four cases reported in this article illustrate the type of problem which arises in evaluating pulmonary function and the contribution which physiologic studies make in evaluation

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THE DOCTOR WRITES

Why do doctors write? The motives of some are noble those of others are not. There is first of all the anxiety to share with one's colleagues worth while information. Such a desire is sacred and should not be profaned for dissemination of knowledge is essential to the progress of medicine. However frequently however does not the urge to show off the writer's knowledge exceed his eagerness to improve that of the reader?

Then there is the itch to write in order to advertise one's intellectual or technical accomplishments to build up a large and lucrative practice or merely to justify one's academic standing in the eyes of colleagues and of the powers that be. Unfortunately many physicians proud of belonging to a profession that is—or should be—both learned and literary are animated by the prejudice that professional success can be measured only with the footrule of literary output. The universality of this belief scarcely lessens its pathos. While it is generally accepted that the only thick or genteel way in which a doctor can advertise himself and his wares is by writing scientific papers in the medical journals or medical articles of popular interest in the lay press the risks of such a practice are not always realized. Wilfred Trotter's warning is pertinent. When the poison of publicity once gets into a doctor's veins there is no cure medical or surgical.

—W R. BETT

M o u n t M d

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GROUP THERAPY AT AN ARMY MENTAL HYGIENE CENTER

DONALD G LINDSAY *Captain MC USA*

THE PROBLEM of increasing psychotherapeutic efficiency in the military service is of increasing sociologic as well as military importance. A maladjusted person who is separated from the service is in most cases permanently lost from the manpower reserve, and those salvaged not only represent manpower conserved for defense but also a stronger, healthier society. A great advantage offered by group therapy is a marked increase in psychotherapeutic efficiency. A psychotherapist can confer with 80 to 100 patients a week in group therapy in addition to his other duties. Thus the function of the military psychiatric clinic becomes oriented more toward salvage and rehabilitation than toward disposition and environmental manipulation, with its resultant problem of secondary gain.

ADVANTAGES AND DISADVANTAGES OF GROUP THERAPY

It must not be thought that group therapy is valuable solely as a time saving substitute for individual therapy, for it has therapeutic advantages peculiar to itself. Although in most instances it is more difficult for the therapist than individual therapy, group therapy in certain patients is valuable when combined with individual therapy because it allows two distinctly different patient-therapist relationships as well as other advantages peculiar to each method. Not the least of the advantages of group therapy is the opportunity it offers the military for much needed research in group dynamics.

One of the main disadvantages of doing group therapy in a military setting is the constant change of patients. This not only reduces the time available for treatment but requires continual readjustment within the group which is particularly disruptive to therapy. This situation can be partially controlled by the plan for group therapy described herein. The length of treatment time available is not so much a problem if the therapist is flexible in his therapeutic methods and goals. Another difficulty is that of getting eight trainees together in one place at one time. The best way to solve this problem is to have good liaison with the

line officers and noncommissioned officers. In this the military social worker in the field is invaluable. If the therapist knows the company officers and noncommissioned officers personally and there is mutual respect, regulations and schedules do not seem to interfere.

GROUP THERAPY IN THE MILITARY SETTING

Changing the membership of a group unquestionably slows progress even though an occasional new member is well tolerated. In an Army mental hygiene center the therapist will commonly start with a group of eight and after three weeks because of pressure from the line cadre shipment to another station or poor motivation for treatment find only four members remaining.

Here the therapist must combat his own feelings of failure and first of all forget those who have not returned. They have received some teaching and even this will often simplify their management at the dispensary or in the company. The natural tendency is to get discouraged and neglect those who remain; however these are the better candidates for treatment. A sure way to discourage them is to place them with four new members and repeat the early phases of treatment.

A good method is to start blocks of four groups of eight members each and plan to get one long term group from this. The therapy is at first directive and superficial with gradual progression to more advanced nondirective techniques. After the first three to five meetings the four groups are consolidated into two therapy groups. These two groups will remain from 10 to 12 weeks in a basic training center. When it becomes necessary to consolidate these two groups the result is a group that is motivated for therapy and physically able to continue.

PATIENTS WHO DO WELL IN GROUP THERAPY

A group of military patients especially suited for group psychotherapy is made up of soldiers who do not socialize well. Common problems encountered in this group are (1) language difficulties (2) lack of formal education (3) meager cultural background, (4) withdrawn schizoid tendencies and (5) immaturity and homesickness. One or two of these patients are put in a group but are not pushed to participate and yet not ignored. The group invariably rallies behind them and they gradually come to participate freely in the group discussion and increase in self-confidence which seems to carry over to their activities in larger groups. They also acquire knowledge of the dynamics behind their patterns of withdrawal. The therapist has to gradually lead the group away from over supporting these people if they are to be desensitized to criticism and taught to respond in a more open aggressive manner.

The soldiers whose psychiatric illnesses are expressed through somatic complaints are a great problem at the dispensary level. The dispensary medical officer does not have the time to explain their condition to them and so relieve their anxiety. Frequently he tends to aggravate their anxiety and hence their symptoms. Often merely telling the patients that their symptoms are due to emotional or motivational difficulties does not suffice. From their point of view, they have symptoms and have not even been examined. These people keep returning on sick call. Such soldiers can be placed in a group and helped greatly. First of all, they are encouraged to talk about themselves, in fact, allowed to talk themselves out. They must also sit and listen to the other members do the same thing. An attempt is then made to tell them in language they can understand and as much in terms of their own experiences as possible, the cause-and-effect relationships existing between their symptoms and their emotional problems. From this, they are guided toward uncovering and working through their emotional difficulties. The members support each other, and a therapeutically useful *esprit de corps* is developed. In terms of their behavior within the group, an attempt is made to wean them away from expressing their conflicts through symptoms. The meetings are structured so that the group itself does this. In the group, a member will be able to see how another member is hiding behind his symptoms, how he resists giving them up, et cetera. One member may point out how another lapses into complaining about his symptoms when the group gets close to his problem. The group also becomes intolerant of symptoms demanding their repression and the members work on their underlying problems. Therapy is mostly along psychobiologic lines. Such group therapy, combined with the occasional intelligent use of adjunctive measures such as an ergot preparation in some patients with vascular headaches and exercises in those with backache, will enable many of them to remain compensated and do Army duty.

If the therapist is successful in getting over the initial hurdles of his patients' suspicion, hostility, acting out, and attempts at manipulation and testing of himself, a group of mild to moderate antisocial personalities and hostile aggressive soldiers will develop a surprising amount of group loyalty from which they will derive therapeutic benefit. Even though this group may be lined up solidly against outside influence, good group support and direction is enough to enable a number of them to adjust and tolerate the necessary demands from outside the group.

Probably one of the groups most fruitful to treat is one with patients who have difficulty adjusting to the military authoritarian culture. This difficulty is usually based on a neurotic child-parent relationship. These people in civilian life are able to stay compensated and are often valuable and well trained.

They break down usually in basic training when they are faced with more rigid authoritarian control combined with lack of gratification of their immature dependent needs

In treating these people as with antisocial types the therapist must be a leader. He must be very adept at handling his authoritarian role and must know clearly himself how and why he conforms to this same authority. He must be able to accept and handle hostility and the problem of secondary gain. In short, he must be able to manage the kind of ambivalence found in any child who must adjust and conform. The child however cannot run away from his parents as easily as can these patients from the therapist. The problems of manipulation of the therapist, of secondary gain and of psychotherapy in an authoritarian setting will be discussed at greater length later on.

A completely nondirective approach early in the treatment of such patients is valuable. At the first meeting the therapist merely comes in, sits down and says nothing. This can be allowed to go on as long as the therapist can remain comfortable. He will observe a gradually increasing anxiety and hostility at the lack of rules and direction. This can be interpreted for the group. He can then allow the group to interact freely and allow or tacitly encourage their expressions of defiance toward authority. As this flouting of authority continues signs of anxiety in the members will develop because of lack of control and rules and signs of disrespect toward the therapist. He then has the opportunity to demonstrate those ambivalent feelings and if he does not betray anxiety his repeated interpretation of the dynamics of the situation will be helpful. If he feels anxiety it will immediately be sensed and will increase the anxiety of the group, prompting it to manipulate him. In short, any group must have and will anxiously search for limits. It is continually testing the limits under which it functions. This dynamic process can be used as a powerful tool in helping soldiers adjust to more authoritarianism.

SELECTING PATIENTS FOR A GROUP

A group of patients with mixed problems is often more responsive to therapy than one with patients with similar personality problems, diagnosis, dynamics, sex, age, etc. The therapist can attempt to balance groups on a more operational basis. There should be a few talkative ones, a few withdrawn ones, a few sympathetic, empathetic ones. No more than one very hostile or one depressed person should be included. Depressed or very hostile patients impede progress in a mixed group, as do the patients who talk continually to keep down their anxiety. Certainly various degrees of motivation for therapy and ability to accept insight are very important considerations in forming a group.

The effects and ramifications of sibling rivalry in each member and an estimate of how they will affect the group dynamics are important. In the military situation it is important not to mix patients who have profile changes with those who do not.

Often it is helpful to have a few individual interviews before placing a patient in a group. Most important, in the military, groups can be formed at random after the initial interview and then, through use of the plan for consolidation and regrouping, be reformed with much saving of the therapist's time. In fact, by this method groups tend to form themselves, and from such groups the therapist can learn more about the therapeutic value of the group make-up.

Before placing a man in a group it is extremely important to decide early whether or not he will require administrative disposition, because once in a group he will not be given such a disposition. The whole atmosphere is that members are expected to adjust. If it becomes obvious that a member must be discharged, the therapist should allow the patient to go on until the pain of outside pressure, plus lack of satisfaction from the therapy, forces him to drop out of the group. Then a social worker sees this patient and gets him to a fellow psychiatrist for disposition.

SOME ASPECTS OF GROUP DYNAMICS

Group therapy is more difficult than individual therapy for the therapist because he feels more threatened. It is something new, and he has his normal skepticism as well as doubts about his ability to do group therapy. The hostile group is quick to sense these feelings and to play them for all they are worth. Such action prompts the therapist to defend himself instead of to accept and eventually interpret the hostility. This defense encourages the group to another onslaught, and many therapists never get beyond this point. Often if the therapist must preserve his dignity, he will, from there on, be doing only that or else blocking communication by use of his authority. The aim is to move the group through interpretation and not let it bog down. Every group, like every individual, resists insight, and hostility and resistance are more difficult to manage in a group. Although silence in group therapy is more distressing for the therapist than it is in individual therapy, strong positive transference anxieties and especially sexual anxieties are easier to control.

Group therapy is harder than individual therapy for the therapist in other ways. The therapist's dynamics seem to be more obvious. Indeed do the patient's. It is easy for the therapist to be fatherly, familiar and friendly with one person, it is harder to invest his libido in a group. It is more difficult for the therapist to recognize and control his own hostility and the effects of his

own experience with sibling rivalry. Feelings of sibling rivalry in the patients are very acute and a show of favoritism can be very damaging but also therapeutic. Both the therapist's and the patients' reactions to this should be interpreted and the group tacitly encouraged to bring up at any time their resentment feelings of jealousy et cetera.

Handling hostility is one of the most difficult but important techniques to learn if the therapist is to do successful group therapy. It is best learned by being himself a patient in a group. In many ways he will be a better group therapist for such an experience. Even more than with individual therapy, group interaction occurs in such a multitude of subtle ways that first-hand experience and working through of his own feelings is essential. It is helpful if he can conduct several group sessions with another therapist sitting in to check and point out instances where he has headed off expressions of hostility, stopped its development, or showed evidence of anxiety in the face of hostility. This technic of course can be used with other aspects of group therapy.¹

The therapist, especially during the first few sessions, is continually under every kind of pressure to be provoked and the slightest sign of a need to defend himself or of any anxiety will bring on more testing. It is the therapist's inability to accept and interpret hostility that is mainly responsible for a group so hostile that therapy becomes impossible. Improper handling of hostility also has much to do with absenteeism. Hostility must be accepted and at the proper time interpreted. The ways in which hostility is expressed (and the way it is conveyed to the therapist) are often felt rather than understood or not realized until long after the meeting.

There are practical methods of managing more direct hostility. For example, if the patient asks the therapist an embarrassing personal question such as "Doc, did you ever masturbate?" The therapist is in a dilemma. If he says "No," he will be suspect anyway and will show evidence of not being able to accept in himself what he purports to accept in them. If he says "yes," he will probably be embarrassed and be weaker than the members who have not had to take a stand. The therapist can say "I will answer this, but first we should have a clear understanding of why it was asked." During this discussion the therapist can point out that one reason the question was asked was to convey hostility and the reasons for these masked feelings are then put up to the group. Invariably the discussion is taken up and carried along for some time. The question also conveys "Doc, do you really believe this stuff? Aren't you a bit hypocritical?" Before the session ends the therapist should answer it, yes or no. If

not, the fact that he wiggled out of answering will be brought up again, directly or indirectly. Also he will find that, after a discussion of the dynamics and dissipation of the tense feelings behind the question, no one is too interested in the answer. All are immensely interested in the fact that the therapist acted openly and in good faith, and that he calmly and freely submitted to the same self scrutiny that caused them anxiety.

Another similar problem that comes up again and again is connected with dependence and with the common attitude toward medical treatment. This has many familiar variations. It may be expressed by, "Here I am, Doc. Now it's up to you to get me well," or "I'm not getting a bit better," or "Doc, you mean this talking is going to cure my headache?", et cetera. The feeling is either that the physician knows what to do to help and he isn't doing it, or, equally bad, that he doesn't know what he is doing. Here again it is necessary to push aside the spoken words and show the group the feeling (hostility) and what is behind it (rejection of dependent needs). This handling of dependence and the gradual establishment of a therapeutic relationship wherein the patient accepts responsibility for working out his own problems is too familiar to require further elaboration.

If the group feeling is directed so that the therapist is the center of attention and each member talks to him, or through him to the others, although the group is less anxious and absenteeism is lower, the possibility that he will have difficulty with the problems of hostility later is increased and he will have difficulty getting the members to accept his interpretations. If the therapist stays on the periphery and forces the members to deal with each other (for they will instinctively try to force the therapist into the center) there is initially as much or more hostility toward him, but he is in a much better position to impart insight and work members against each other. In the military situation, with poorly motivated patients, the latter method, if used early, often produces so much anxiety that absenteeism is a problem. An early directive superficial atmosphere shading gradually into a nondirective one is perhaps more practical.

A group has movement. This means more than the constant talking of members or the fact that most of the members are entertained. Perhaps it could best be defined as a period of freedom from resistance. There can be definite movement in periods of silence. The group (as well as the therapist) senses lack of movement and members are acute to sense when the therapist is anxiously fighting to maintain movement. The group tends to resist movement, yet is anxious when it stops. Group sessions are slower to start and harder to stop than are individual sessions. The therapist may struggle to maintain movement, but he must be

particularly subtle and free from anxiety in his methods of doing this. A big fear of the beginning therapist is that he will not be able to keep the group going. One of the first things he must do is develop the ability to be comfortable during periods of silence and manipulate them for therapeutic benefit. Long periods of silence early in therapy may become nonproductive and filled with hostility. In the early teaching phases of group therapy under the plan discussed herein long silences are not allowed. One way to handle them is to ask "Why the silence? What does it mean? Why did it happen now?" Perhaps someone will say "Because we have no more to say." Again the therapist asks "Why?" or "Why at this particular point?" et cetera and usually a discussion along therapeutic lines follows. In other words the silence becomes a rallying point about which the group moves.

PROBLEMS IN MILITARY GROUP THERAPY

A free flow of communication simply is not achieved in an authoritarian setting; however, too much has been made of the cramping effects of the military culture on psychotherapy. In civilian life we are in many ways in similar positions toward authority. Civilian psychiatric patients who confess or threaten crimes and those who make sexual advances present problems basically very similar to the soldier who will not do duty or who wants a profile change or a discharge. To handle these problems in military as in civilian practice we must know ourselves, know our patients, structure the treatment situation so that such interference will be at a minimum and above all interpret emotions.

Too many of us too greatly enjoy the power the military gives us. In the military psychiatrist the combination of this need for power with the hostility he may feel toward the authority over him, covered by a veneer of rationalization, produces a psychiatrist better suited for disposing of patients than for treating them. Such a person has difficulty in attaining firmness and still maintaining rapport. He is continually worried that things are going to get out of control. Every military psychiatrist must decide how much authority he requires, how this may be preserved, and how much may be eliminated in the interests of psychotherapy.

The patients are told that just as in civilian life during the treatment time and in the confines of the room there will be no army, no rank. The physician wears a white coat, but most important is his attitude. The feeling tone he conveys and produces in the patient is the crucial thing. The emphasis is on therapy and the impression is conveyed that environmental manipulation of any sort just is not done. In such a setting group interaction in military practice can be built on the basis of mutual openness, trust, and respect just as it is in civilian practice. It is amazing how much such a group will tolerate. The hostility divested of

some of its fearfulness to everyone, assumes a more benign character. The members accept hostility from each other and often even try to be helpful in face of it. Usually the whole group will rally to support the hostile one and will accept his outbursts as therapeutic abreaction. Once this atmosphere is established therapy moves rapidly.

In summary, then, every member of a group is in need of rules to govern his behavior and becomes anxious if he does not know the limitations imposed on the group. He watches anxiously to see if intragroup tension is getting too high; the individual intensity of these anxieties varies with each person's personality. Limitations can and should be made, but the way in which they are made markedly influences the progress of therapy. A skillfully constructed, flexible, nonprovoking boundary that changes with the group's own anxieties and need for control would seem best.

THE PROBLEM OF SECONDARY GAIN

The more the military psychiatrist can eliminate from his methods any suggestion of secondary gain, the better therapy he will do. To be sure, the psychiatrist's job is neither to change the Army to fit the soldier, nor to change the soldier to fit the Army. His task is to help them both to fit together, for there are aspects of both he cannot change. The best way for him to manage the problem of secondary gain is simply not to allow any to his patients. The patient should be given the understanding that he is there for treatment, and that the therapist has no idea but what treatment will be successful. If the patient seems to require disposition or environmental manipulation, the therapist can arrange for a fellow psychiatrist to take care of such matters. Then the patient can be told that the therapist does only therapy; if the patient is interested in disposition he must see another member of the staff. After seeing the patient in a group the therapist is well able to decide what should be done and behind the scenes should assist the other staff member. This does not prevent the patient from returning for therapy; however, patients who have received profile changes are treated in separate groups.

It is sometimes frightening how desperately some patients will bent their head against such a wall. Many adjust, however, continue therapy, and do good service. All this assumes accurate diagnosis, faith in one's decisions, good treatment, and good liaison with the line officer. As the therapist's experience increases, he will find his need for the other psychiatrist decreases.

Early in treatment the patient may be told that military psychiatrists and their patients have a special relationship. The soldier patients may freely express themselves. The psychiatrist in turn has no power to change the Army for them. Sometimes it is helpful to tell the patients that we learn always through effort and

the first step toward the patient's understanding of the causes of his trouble and can lead to an examination of deeper reasons: *i. e.* to discussions of dependence ambivalence perhaps child parent relationships, mechanisms of defense et cetera. They will also lead to ventilation and discussion of the way the patient was treated at the dispensary and of his other grievances toward the Army and to further emotional expression.

In this atmosphere of free communication with logic and feeling flying in all directions the therapist observes what actions he can. What are the relationships between the members? Why do cliques form? When and why do they change? Why do some members not participate and should an effort be made at this time to draw them into the discussion?

As the group progresses perhaps after three or four sessions the therapist gradually begins to drop back—there is plenty to observe—and to follow where the patients lead. The character of the meetings then tends to fall into a pattern which seems to repeat itself in each group. First, there is the development of and adjustment to the group atmosphere second the testing out of intermember interclique and member therapist relations. Then out of the concurrent ventilation mutually supportive group feeling is established. Communication is freer and the members having gotten to know each other more intimately develop stronger transference feelings and intragroup loyalties. The point is reached where the group functions in an open intimate manner where any member feels free to discuss almost anything. The other members feel sure of tolerance and do not hesitate to discuss the feelings or experiences others bring out or to bring up feelings of their own that the discussion may have brought to mind. In this way and with some guidance from the therapist, the group gradually explores its experiences uncovers repressed material and provides an excellent medium for corrective experience. With the help of the therapist dream analysis and transference analysis is used. The therapist then finds his role gradually changing from that of teacher of mental hygiene to that of psychobiologic psychotherapist, and finally to that of therapist along more psychoanalytic lines.

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P. s. C. a. m. b. d. g. M. 1953 p. 9

CHANGES IN THE PROTHROMBIN COMPLEX AFTER TOTAL BODY IRRADIATION

R L VERWILGHEN *Second Lieutenant Medical Corps*

J M PEREMANS *Second Lieutenant Medical Corps*
Belgian Army

ACUTE irradiation of the body is the cause of disturbances in blood coagulation which are not yet entirely understood. Investigations on human beings have been possible only in Japan¹⁻³ or after accidental irradiations.⁴

After irradiation of animals, such as dogs, with the L D₁₀₀ a hemorrhagic tendency is evident. Severe thrombopenia is one of the causes of this syndrome.⁵⁻¹³ Jackson^{14, 15} demonstrated that prothrombin consumption decreases with the number of thrombocytes. Prolongation of the clotting times occurs frequently at the same time, but this is not always the case.¹⁶

Disturbances other than the diminution of the number of platelets seem to occur in blood coagulation. Allen's hypothesis^{1, 17} that heparin would be present in the blood should be discarded^{5, 13-15, 18, 19} but the possibility that other anticoagulants may be present cannot be excluded. Jacobs and associates²⁰ described a decrease in the concentration of the serum prothrombin conversion accelerator (SPCA) (convertin) present in the serum of irradiated animals.

TECHNICS

Irradiation. Our dogs were irradiated over the entire body with x-ray lamps of 200 kv and 15 ma. The animals were always turned over after half the dose had been given.

Investigation of blood coagulation. The platelet count was determined by means of Van Goidsenhoven's²¹ technic and the clotting time by the Lee-White method. The plasma recalcification time was determined as follows. A volume of citrated plasma was recalcified with an equal volume of a 1/40 molar CaCl₂ solution. The heparin tolerance test consists in measuring clotting times of recalcified plasma to which known quantities of heparin are added. The prothrombin time following a one-stage technic was done as described by Quick.²² The specific

From the Unit of Louis Laboratoire de Physiopathologie du Centre Océanographique de l'Armée Belge.

determination of prothrombin accelerator (Ac globulin) and con-
vertin were performed according to the methods of Koller and

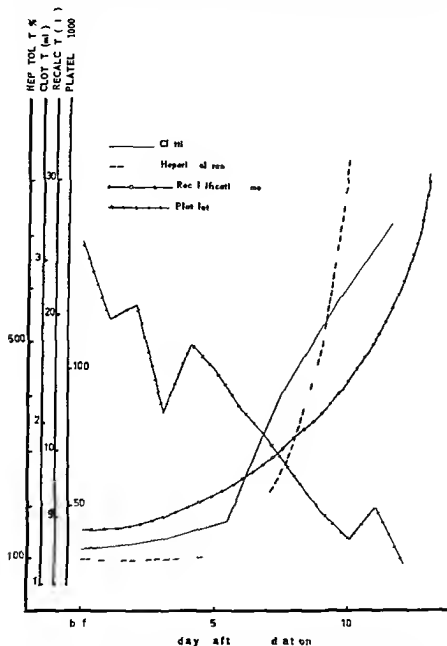


Fig 1 M a u a l of the cl t t i n g a d a l c i f a t o n t i m the heparin
tolerance t t and the mber of blood plat l t r a d i a t d d g

associates and Larneau and co workers and the fibrinogen con-
centration was determined photometrically Antithrombin was

determined by a "one-stage" technic as follows. A known quantity of thrombin was added to citrated plasma and the coagulation time was determined and compared with the one found on normal plasma. In the determination following a "two stage" technic, a known amount of thrombin was added to the defibrinated plasma and its inactivation was followed. The thromboplastin generation test was done as described by Biggs and Macfarlane²⁵

TABLE 1 The prothrombin time as measured by the Quick technic in irradiated dogs (Results are expressed in percent of normal)

Dog	Before irradiation (percent)	Days after irradiation									
		6	7	8	9	10	11	12	13	14	15
		Percent									
3	100		50	100	100		100	32	35	30	28
4	100	100		100			46				
5	60			23	<5		<5				
6	100			75	50		65				
7	50			75							
11	100				48						
12	100		75	48	19						
15	75		60								
17	50		35		38						
21	60		60		38	35					
22	100	50		38	35						
23	55	35	28								
24	50		52				60				
26	100	100		75	100	100					

RESULTS

From observation and autopsy study of a series of dogs irradiated with 400 and 600 r, we found the classical hemorrhagic syndrome in 16 of the 17 animals. We found a gradually increasing thrombopenia, a lengthening of the clotting and recalcification times, and a lengthening of the heparin tolerance time (fig. 1). It should be mentioned that in many animals the clotting time during the last days before death was greatly lengthened, and the blood was almost totally incoagulable.

The results obtained with the "one stage" prothrombin time are given in table 1. A prolongation is found in a certain number of the animals but the amount of acceleration does not seem to be influenced by the irradiation.

The prothrombin concentration was decreased in 10 of the 15 dogs on which this determination was made (table 2). There was a significant decrease in the amount of convertin in 13 of 15 dogs (table 3). After irradiation there exists as many investigators have already indicated an increase in the fibrinogenemia. We have never found any increase in antithrombin either with a one stage or a two stage technique.

TABLE 2 Prothrombin concentration in plasma of irradiated dogs
before and after treatment

Dog	Bl r dia (percent)	Days of irradiation									
		6	7	8	9	10	11	12	13	14	15
		P									
1	100		100	100			100	53	51	70	70
4	100	100		100			100				
5	100			75	52		37				
6	100			100	100		100				
7	75			100							
11	100				64						
12	70		65	100	47						
15	100		100								
17	70		68	100	100						
21	100		100		70	15					
22	70	67		60	55						
23	70		52								
24	68		40				68				
26	100			68	100	100					

The thromboplastin generation test gave results that show a severe disturbance in the formation of the thromboplastin after irradiation (fig 2).

Only in some of the animals was thrombopenia the cause of these disturbances and in these the addition of platelets from a nonirradiated dog gave an increase in the formed thromboplastin to a normal level (fig 3).

In another group of animals a decrease in the serum factor needed for thromboplastin generation was the cause of the abnormal results obtained in the thromboplastin generation test. In those cases the addition of normal serum acting as a source of convertin and Christmas factor brings the result back to the

May 1955)

Recalcification time

60" (sec)

50

40

30

20

10

— Normal dogs
- - Irradiated dogs

1

2

3

4

5

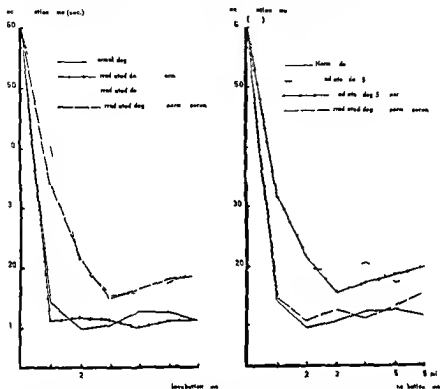
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7 min

Incubation time

Figure 2. Thromboplastin generation test in a series of normal and irradiated dogs about eight days after irradiation

normal (fig 4) In some animals we found a combined lack of a compound in the serum and of platelets and a normal result in the thromboplastin generation test was obtained only when these two compounds were substituted by normal reagents (fig 5)



Figur 3 Thromboplastin generation time with a mixture of components from dog 17 (1 day after irradiation) and normal components. The results demonstrate a deficiency of blood platelets. Figur 4 Thromboplastin generation time with a mixture of components from dog 3 (5 days after irradiation) and normal components. The results demonstrate a deficiency of serum.

Determination of the Christmas factor and of the antihemophilic globulin was made in the following manner. The plasma to be investigated is added to plasma containing the Christmas factor or that from a hemophilic patient, and the recalcification times of these mixtures are compared with that of the same experiments where normal plasma is used. We have thus found that the amount of Christmas factor and of antihemophilic globulin is normal in our irradiated animals.

Plasma recalcification times of plasma mixtures. Addition of normal plasma. The results of these tests are given in table 4. A small amount of normal plasma brings the results to normal.

values again. This is an argument against the presence of an anticoagulant as a cause of the disturbance in blood clotting.

TABLE 3 *Convertin content in plasma of irradiated dogs expressed as percent of normal*

Dog	Before irradiation (percent)	Day after irradiation									
		6	7	8	9	10	11	12	13	14	15
		Percent									
3	100		68	100			66	48	42	66	57
4	100	70		100			100				
5	100			24	<5		10				
6	100			80	66		63				
7	75			60							
11	100				48						
12	80		45	70	13						
15	100		70								
17	75		48	100	65						
21	100		100		75	18					
22	100	45		43	42						
23	65	63	33								
24	75		45				45				
26	80	55		70	100	100					

TABLE 4 *Recalcification time on plasma mixtures from normal and irradiated dogs*

Quantity		Dog 17 9 days after irradiation	Dog 21 8 days after irradiation
Normal dog plasma	Irradiated dog plasma		
0.1		1 min. 4 sec.	1 min. 1 sec.
0.09	0.01	1 min. 17 sec.	1 min. 9 sec.
0.075	0.025	1 min. 11 sec.	1 min. 17 sec.
0.05	0.05	1 min. 11 sec.	1 min. 21 sec.
0.025	0.075	1 min. 14 sec.	1 min. 26 sec.
0.01	0.09	1 min. 5 sec.	1 min. 47 sec.
	0.1	3 min. 3 sec.	4 min.

650 U

normal (fig compound 1 thrombopla compounds



Figure 3
dog 17
demonstrates
the effect of
irradiation on
platelet aggregation

Deter-
globulin
vestigat
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where no
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Plasma
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Recalcification time (sec.)

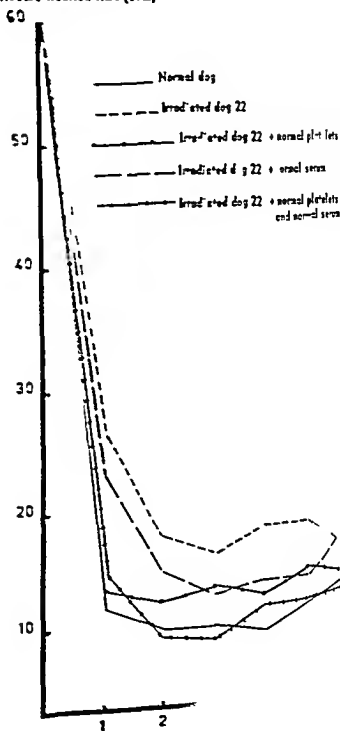


Figure 4: Thromboplastic activity
(serum activity after irradiation)
of Normal

TABLE 5 *Recalcification time (R. T) and heparin tolerance time (H. T. T) of mixtures of plasma from irradiated dogs and patient on bishydroxycoumarin*

Quantity		Normal dog plasma		Plasma from dog 21 10 days after irradiation	
Dog plasma	Dicumol plasma	R. T	H. T. T	R. T	H. T. T
0.075	0.025	56 sec.	1 min. 56 sec.	3 min. 25 sec.	4 min. 50 sec.
0.05	0.05	1 min. 6 sec.	2 min. 10 sec.	3 min. 8 sec.	5 min. 7 sec.
0.025	0.075	1 min. 14 sec.	2 min. 19 sec.	3 min. 23 sec.	5 min. 16 sec.
	0.1	3 min. 34 sec.	5 min. 51 sec.	3 min. 34 sec.	5 min. 51 sec.

Mixtures of plasma from irradiated dogs with bishydroxycoumarin (dicumarol) plasma Plasma from irradiated dogs cannot shorten the recalcification time of dicumarol plasma as does plasma from normal dogs (table 5). This can be explained if the same factor is lowered in the two samples of plasma.

TABLE 6 *Recalcification time (R. T) and heparin tolerance time (H. T. T) of mixtures of plasma from normal and irradiated dogs with plasma adsorbed on barium sulfate*

Dog plasma	Barium sulfate plasma	Normal Dog		Dog 21 10 days after irradiation	
		R. T	H. T. T	R. T	H. T. T
0.05	0.05	1 min. 19 sec.	2 min. 5 sec.	3 min. 56 sec.	>30 min.
0.025	0.075	1 min. 10 sec.	2 min. 25 sec.	9 min. 20 sec.	>30 min.
0.01	0.09	2 min. 20 sec.	5 min. 42 sec.	12 min.	>30 min.
	0.1	>30 min.	>30 min.	>30 min.	>30 min.

Mixtures with plasma adsorbed on barium sulfate This experience (table 6) gives the same results as when dicumarol plasma is used.

Mixtures with serum Addition of a small amount of normal serum greatly shortens the recalcification time of irradiated plasma but serum adsorbed with BaSO_4 causes no shortening of these recalcification times (table 7).

The influence of vitamin K₁ was examined. This agent can increase the reduced amount of prothrombin and convertin from irradiated dogs. In our studies the quantity of vitamin K₁ needed

was very high and the increase in prothrombin and convertin was rather slow. Further investigation is needed on this subject.

TABLE 7 *Recalcification time of plasma from irradiated dogs with normal serum and serum adsorbed on barium sulfate*

Plasma 21 days after irradiation	Serum	Recalcification time	
		Normal serum	Barium sulfate serum
0.075	0.025	1 min. 44	5 min. 28
0.05	0.05	1 min. 45	6 min. 35 c
0.025	0.075	2 min. 21 c	10 min.
0.01	0.09	2 min. 20	no
	0.1	no	no

DISCUSSION

A series of dogs was irradiated with x ray with doses of 400 and 600 r. No significant difference was found between these two groups of animals and the results were given together. All the dogs who lived more than a week after the irradiation (16 of the 17 animals) showed clearly a hemorrhagic syndrome.

In this study we tried to investigate the disturbances occurring in the blood coagulation of these animals. A severe thrombopenia appeared. It seems probable however that other factors play their part in the pathogenesis of this syndrome. In other cases of severe thrombopenia the clotting times are not greatly increased, but after irradiation the coagulation of blood is very much delayed and we may find blood which does not even clot at all.

A significant decrease of prothrombin and convertin concentrations in the plasma was found in a significant number of the irradiated animals.

Hypoconvertinemia occurring in 13 dogs out of the 15 can be very severe. This insufficiency of convertin can also be deduced from the results obtained in the thromboplastin generation test. We found in some of the dogs a lack in thromboplastin formation which can only be compensated if serum from a normal dog is added to the mixture in which the thromboplastin formation is investigated. In this test the serum acts as a source of the Christmas factor and of the convertin. By specific determination of this factor we were able to demonstrate that the Christmas factor was present in a normal amount. The factor from the serum that seems

to be present in an insufficient concentration is probably convertin

This lack of convertin can be confirmed by the results obtained in recalcification times on mixtures of plasmas

Addition of plasma that contains convertin brings the recalcification time of a plasma sample from an irradiated dog again to normal, but addition of a convertin poor plasma (plasma adsorbed with BaSO_4 or taken from a patient during bishydroxycoumarin therapy) cannot attain the same result. Normal serum, containing convertin, also brings these recalcification times back to normal, but after adsorption with BaSO_4 , this was no longer the case.

The possibility of the presence of anticoagulants was investigated. The results with two technics of determination of the antithrombin were normal. This seems to exclude the possibility that heparin is present. Neither with the thromboplastin generation test nor with the determination of recalcification times on plasma mixtures did we find any evidence for the presence of anticoagulants.

We finally investigated the action of vitamin K_2 in bringing the amounts of prothrombin and convertin again to normal. This vitamin could produce an increase in these amounts, but further investigation is also needed here.

SUMMARY AND CONCLUSIONS

In the series of dogs irradiated with 400 and 600 r we found severe thrombopenia. Furthermore, there was a severe lack of convertin, and to a lesser extent, lack of prothrombin in the majority of dogs. It was not possible to find facts in favor of the hypothesis that anticoagulants are present.

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COARCTATION OF THE AORTA

Report of Four Cases

LAWRENCE L BEAN *Captain (MC) USN*
DAVID B CARMICHAEL *Lieutenant (MC) USN*

IMPROVEMENT in surgical technic, better anesthosia, and the establishment of blood vessel banks have increased the responsibility of the internist, pediatrician, and general practitioner in the early diagnosis of coarctation of the aorta. Although the surgical contraindications are being progressively narrowed, the most suitable candidate continues to be the patient in the second or third decade of life. The complication of atherosclerosis in men beyond the age of 30 years materially affects the prognosis. Because this anomaly is more common in men, an early diagnosis is extremely important.

The syndrome of coarctation of the aorta and the history of the development of definitive surgical treatment have been covered by many articles and textbooks. The interested reader is referred to recent publications of White¹ and Gross.²

Military medicine affords a unique opportunity for early discovery of this lesion and cases are being diagnosed in increasing numbers in military hospitals.³ Frequently, the only general physical examinations in early adult life for many young men are those associated with enlistment or induction into the military service.

CASE REPORTS

In a six month period at this hospital, four cases of coarctation of the aorta were recognized. In all four instances the opportunity for discovery of this lesion had been present at an earlier date, but had been missed because of an inadequate physical examination. The first patient was hospitalized with a working diagnosis of acute meningo-encephalitis and for many days the hypertension was attributed to damage of the central nervous system. The second patient was a female dependant who was initially examined during the third trimester of a pregnancy. She was originally considered to be pre-eclamptic, and the diagnosis was made in the postpartum period when the hypertension was

not alleviated. The third patient was an infantryman who had served two years with the Army in Korea and in whom the diagnosis was established during the physical examination incident to his release to inactive duty. The fourth patient was a 15 year old boy who had spent his entire life under the observation of physicians, including a prolonged period of hospitalization in an institution for convalescent care of rheumatic children with out the correct diagnosis being asuspected.

Case 1 A 17 year old man was admitted to this hospital as an emergency case. He had been receiving treatment for acute pharyngitis and was under medical observation when a generalized convulsion occurred. Upon initial examination the patient was semicomatose. The eyes deviated to the upper right quadrant. A blowing grade II systolic cardiac murmur was heard along the left sternal border and the blood pressure was 180/104 mm Hg. The superficial reflexes were absent and bilateral ankle clonus was observed. The deep reflexes and toe signs were normal and nuchal rigidity was minimal.

A lumbar puncture on admission revealed clear colorless fluid under increased pressure. The protein was 28 mg per 100 cc. There were one polymorphonuclear cell and 10 red blood cells per cu mm. Bacterial culture was negative. The lumbar puncture was repeated the following day with similar findings including a spinal fluid sugar of 60 mg per 100 cc. On admission the white cell count in the peripheral blood was 7 000 per 100 cc hemoglobin 15 grams per 100 cc.

Nuchal rigidity increased during the initial 48 hours and restlessness continued. The level of consciousness gradually improved and coherent responses were obtained on the second hospital day. Serial blood pressures were consistently elevated and this was interpreted as a result of hypothalamic involvement. The patient gradually improved and was ambulatory and asymptomatic 10 days after admission. The neurologic findings were completely negative. During this period serial laboratory determinations of blood and spinal fluid were negative.

While the patient was being examined in the convalescent period the abnormal vascular findings were first noted. The femoral popliteal and dorsalis pedis pulsations were absent bilaterally. Bounding pulsations in the radial and brachial arteries were noted. The blood pressure in the upper extremities was 160/115 mm Hg. in the lower extremities it was unobtainable. The intercostal arteries were easily palpable. The previously described systolic murmur in the front part of the chest was well heard in the back along the spinous processes of the upper dorsal vertebrae where it was heard as a grade III systolic bruit. The past history now revealed that the patient had had cramping leg pain when playing high school football.

Oscillometric determinations revealed almost total absence of pulsation in the lower extremities and high values for the upper limbs.

The ballistocardiogram taken preoperatively revealed a total absence of the k stroke and was considered characteristic of aortic coarctation



Figure 1 (case 1) (A) Preoperative ballistocardiogram showing absence of K wave (B) Triangular arrow points out the K wave in ballistocardiogram made 10 months postoperatively

(fig 1A) A roentgenogram of the chest revealed the left ventricular shadow to be rounded and the aortic knob small with notching of several rib margins (fig 2) The electrocardiogram revealed left ventricular enlargement and the electroencephalographic findings were within normal limits

At operation an area of stricture of the aorta just distal to the subclavian artery and extending about five millimeters was found The intercostal and thoracic arteries were large and thin walled The ductus arteriosus was found to have a pin point lumen and was ligated and divided The area of aortic constriction was mobilized excised and an end-to-end anastomosis effected An adequate lumen exceeding 1.5 cm in diameter resulted With removal of the clamps the aorta pulsed normally distal to the suture line

The immediate postoperative course was uneventful The blood pressure in the arm was 150/100 mm Hg and in the leg 150/95 mm Hg Oscillometric determinations showed a return to the normal range Four, eight and 10 months later he was examined At those times he was doing well and his exertional tolerance was excellent Examination at four months revealed the blood pressure to be 132/90 mm Hg in the arm and 140/95 mm Hg in the leg The heart was not enlarged and no murmur was heard anteriorly A faint systolic murmur was audible along the upper dorsal spine The feet were warm and perspired normally Pulsations in the lower extremities were normal A ballistocardiogram taken 10 months following operation demonstrated a definite k wave (fig 1B)



Fig. 2 (a, b) Roentgenogram showing the left ventricular border with a millimeter scale and a vertical line indicating the position of the heart.

Case 2 This 24 year old woman was first examined during the eighth month of pregnancy. At that time routine examination revealed hypertension and she was hospitalized. The pregnancy had been uneventful with the exception of occasional frontal headaches associated with blurring of vision. The past history revealed that the patient was told she had leakage of the heart early in her childhood although her activity had never been restricted. Until the present examination she had not known of an elevated blood pressure. Physical examination revealed an enlarged heart. A harsh grade IV systolic murmur was audible over the entire precordium and was loudest at the left sternal border in the fifth intercostal space. There was no thrill and the pulmonary second sound was accentuated. A harsh systolic bruit was audible in the carotid vessels. The blood pressure in the arm was 180/92 mm Hg. Pressure in the lower extremities was not taken.

The patient was considered to be pre-eclamptic and was treated with bed rest, magnesium sulfate and sedation. Four days after admission the membranes spontaneously ruptured and a double footling breech

delivery was performed. Two cords were found coming from one placenta with the second cord leading to a lithopedion. The normal child was a male infant needing no resuscitation. The postpartum period was uneventful except for a continued elevation of blood pressure. Further examination revealed that the femoral popliteal and anterior tibial pulsations were markedly diminished. The blood pressure in the lower

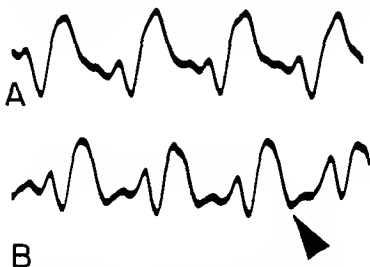


Figure 3 (case 2) (A) Preoperative ballistocardiogram showing absence of K wave (B) Triangular arrow points out the K wave in ballistocardiogram made 17 days postoperatively

limbs was 110/88 mm Hg. Increased intercostal collateral circulation was noted and a systolic bruit was audible over the upper dorsal spine. A ballistocardiogram was considered diagnostic of aortic coarctation and showed a total absence of a K wave (fig 3A). A roentgenogram of the chest (fig 4) revealed notching of multiple ribs and a small aortic knob. The electrocardiogram showed no abnormalities.

The patient was operated on four months later. Resection of the fourth left rib exposed an adult type of coarctation of the aorta. The intercostal vessels were markedly dilated. The ductus arteriosus was patent and was doubly ligated and divided. The aorta was mobilized and the area of constriction resected. Following re-establishment of the aortic channel, normal pulsation distal to the suture line was observed.

The patient recovered strength rapidly. When examined four months after operation, her exertional tolerance was excellent. She was five months pregnant, indicating that she had been about one month pregnant at the time of operation. The blood pressure in the arm was 160/80 mm Hg and in the leg 160/110 mm Hg. The heart was not enlarged and on auscultation a grade III systolic murmur was audible over the precordium. The bruit over the dorsal spine had become much softer.

in intensity. A small k wave was observed in the postoperative ballistocardiogram (fig 3B).

At term she had a normal delivery. The postpartum course was uneventful and at discharge the blood pressure in the upper extremities was 140/68 mm Hg.



Fig 4 (a 2) Roentgenogram showing the left lateral view of the thorax, showing the heart and lungs.

Case 3. This 23-year-old man was undergoing his physical examination for separation from the Armed Services when an elevated blood pressure was observed. In the four years antecedent to admission he had been examined on four occasions, including two examinations incident to military service. All had been considered normal. His exertional tolerance was excellent and he had served a full tour of duty with the infantry in Korea.

The blood pressure in the arm was 180/110 mm Hg and in the leg 95/80 mm Hg. The radial arterial pulsation was bounding and contrasted to the pulsations of the dorsalis pedis and anterior tibial arteries in which the pulsation was barely discernible. The heart was not enlarged and the apical thrust not increased. The first heart sound was reduplicated and the aortic second sound was of normal intensity. No murmur was audible anteriorly; however, a harsh grade II systolic murmur was present over the upper three dorsal vertebrae. Pulsations in the intercostal arteries were prominent.

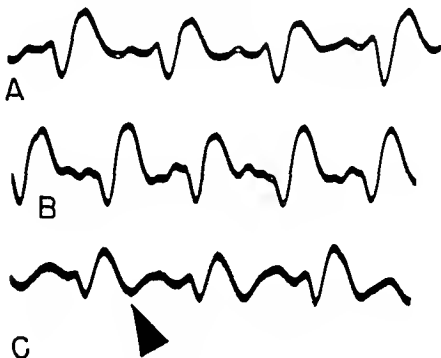


Figure 5 (case 3) (A) Preoperative ballistocardiogram showing absence of A wave (B) Ballistocardiogram made 21 days postoperatively (C) Triangular arrow points out the A wave in ballistocardiogram made eight months postoperatively

The ballistocardiogram revealed no significant A wave and was considered to be indicative of aortic coarctation (fig. 5A). A roentgenogram of the chest (fig. 6) showed rounding of the contour of the left ventricle, a small aortic knob, and definite notching of several rib margins. Oscillometric studies revealed markedly decreased pulsations in both lower extremities. The electrocardiogram revealed evidence of left ventricular enlargement.

After resection of the fifth rib, a constriction of the aorta was found at the site of the ductus arteriosus and extending cephalad several millimeters. There was no pulsation of the dilated poststenotic aorta. The obliterated ductus arteriosus was ligated and divided, and the constricted area removed. Following an end-to-end anastomosis, pulsations were palpable throughout the visible aorta.

The immediate postoperative course was complicated by a temporary paralysis of the left vocal cord but was otherwise uneventful. Eight months after operation the patient appeared normal and was entirely



Fig. 6 (ca. 3) Rtg. gram bou. g. d. g. f. th. l. ft. t. l.
border with adm. t. e. ort. k. b. a. d. t. h. g. f. l. b. m. a. g.

asymptomatic. The blood pressure in the arm was 135/85 mm Hg and in the leg 140/100 mm Hg. The heart was not enlarged and no murmurs were audible either anteriorly or over the back. The electrocardiogram was normal and ballistocardiograms taken at 21 days (fig. 5B) and eight months (fig. 5C) following operation revealed a definite K wave.

Case 4. This 15-year-old youth was initially admitted with a diagnosis of rheumatic heart disease and subacute bacterial endocarditis.

The history indicated that after a tonsillectomy at the age of four years the family was told that the patient had an abnormal heart. Shortly thereafter he was placed in a convalescent home for rheumatic children where he remained for two years. The blood pressure in the arm

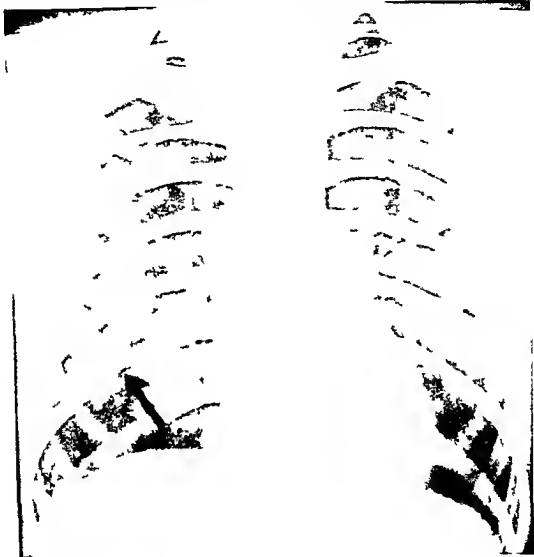


Figure 7 (case 4) Roentgenogram showing a small aortic knob and notching of the ribs

was 170/115 mm Hg and in the leg unobtainable. The pulse was 96 and the temperature was 99.6° F. The heart was enlarged to the left and the apical thrust was accentuated and heaving. A systolic thrill was palpable at the apex. A harsh grade III systolic murmur was heard all over the precordium and was best heard in the third left intercostal space. A middiastolic rumble was audible at the apex. The pulmonary second sound was accented.

The patient was placed on bed rest and several blood cultures were taken. All proved to be negative. The temperature promptly returned

to normal and was not again elevated. He was given no medication. A roentgenogram of the chest (fig 7) revealed some left ventricular enlargement, notching of multiple rib margins, and a small aortic knob. A ballistocardiogram (fig 8) taken preoperatively failed to show a significant K wave and was considered to be compatible with aortic coarctation. Oscillometric studies revealed marked diminution of pulsations in the lower extremities. The electrocardiogram revealed left ventricular enlargement.



Fig 8 (ca 4) P p at ve b list ca d gam bow g
b nc f K wa

At operation the left fifth rib was resected extrapleurally. The intercostal arteries were noted to be dilated and tortuous. A marked constriction of the aorta at the level of the ductus arteriosus with slight poststenotic dilatation was exposed. Markedly decreased pulsations were present in the distal aortic segment. The ductus arteriosus was ligated and divided, following which the stenotic portion of the aorta was excised (fig 9) and the ends approximated.

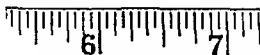


Fig 9 (ca 4) St nott port o f the
ta x d at p ti (phot g ph
l ghtly l g d)

The immediate postoperative period was uneventful. A roentgenogram taken two weeks after operation revealed the usual degree of pleural

reaction (fig 10) The patient gained weight and was discharged to his home One month after final discharge he returned to the hospital complaining of poor appetite aching of his legs and weight loss He was febrile and obviously had lost weight The blood pressure in the



Figure 10 (case 4) Roentgenogram taken two weeks after operation revealing the usual degree of pleural reaction.

arm was 140/118 mm Hg and in the leg 112/70 mm Hg Examination of the heart revealed clinical findings similar to those in the pre-operative period

The patient developed clinical evidence of subacute bacterial endarteritis and responded poorly to massive doses of available antibiotics In spite of repeated blood cultures both prior to and following chemotherapy all were reported negative The infection was controlled on 2 grams (12 000 000 units) of penicillin and 2 grams of streptomycin daily until a dissecting aneurysm developed at the area of the suture line (fig 11)

The patient died eight months following his initial operation

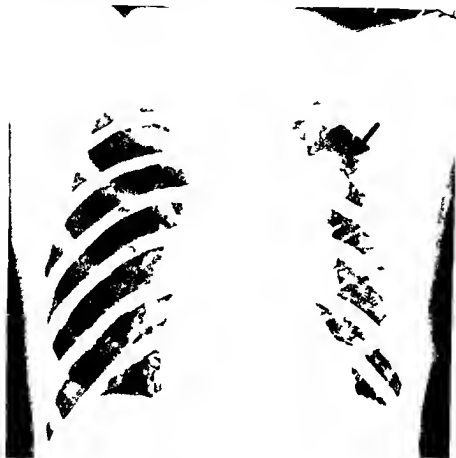


Fig 11 (4) Roentgenogram showing the large aneurysmal dilatation distal to the constriction of the aorta

DISCUSSION

Surgical Technic The operations performed on these four patients were essentially similar (All operations were performed by Dr William E Adams of the University of Chicago consultant thoracic surgeon at this hospital) All the patients presented the adult type of coarctation In each one rib—usually the fifth sometimes the fourth—was resected from the costal cartilage and the transverse process The lesion was identified and the constricted portion of the aorta freed for 15 cm on each side of the coarctation The ductus arteriosus was doubly ligated and severed as were the intercostal arteries that leave the aorta in this area Potts clamps were applied on each side and the constricted portion removed An end-to-end anastomosis was made in two layers joining intima to intima The first layer con

sisted of three continuous mattress sutures, each going one third of the way around the vessel. The second layer consisted of three continuous running sutures (No 00000 oiled silk) applied in the same way. The lower clamp was released first to determine if there were any leaks, then the upper clamp was removed.

The ribs were brought together and the muscles approximated by cotton sutures. A No 12 to 14 French catheter was placed in a dependent portion so that six to 10 cm of negative pressure of water could be used. The catheter was removed on the second or third day, and the patient allowed out of bed. Sutures were removed on the seventh or eighth day.

Diagnosis. Prior to the advent of definitive vascular surgery the improvement in the diagnosis of coarctation of the aorta was of academic interest only. The outlook for these patients was radically changed by the introduction of these surgical techniques, and coarctation of the aorta now may be listed among the few forms of hypertension and of congenital heart disease that are potentially curable. Following successful resection of a narrowed aortic segment, the majority of the usual causes of death in such patients—the rupture of the aorta, cardiac failure, cerebral hemorrhage, or thrombosis—are made unlikely.^{2,4,5} Bacterial endarteritis and cardiac insufficiency secondary to associated congenital cardiac lesions are potential complications little altered by operation.

The diagnosis still depends upon adequate physical examination. Refinements in diagnostic technic such as ballistocardiography, angiocardiology, oscillometry, et cetera, serve only to delineate the degree of aortic obstruction. Occasionally the alert roentgenologist will note rib notching and a small aortic knob, and direct attention to the correct diagnosis.

Careful examination of the peripheral vascular system is the rule in elderly patients because of the stress placed on vascular changes in diabetes mellitus and arteriosclerosis. Similarly, the pediatrician has made such an examination a routine part of the postnatal evaluation of each newborn infant. It is our purpose to stress such care in examination of the young adult of military age. The clinical picture can be variable, as illustrated by the cases presented above, but a common denominator was *decreased* arterial pressure in the lower extremities. Palpation of the peripheral arterial system in all patients must be the rule if the condition is to be recognized.

SUMMARY

In presenting the histories of four patients with coarctation of the aorta, the variability of the clinical findings is stressed.

The abnormal physical and laboratory findings leading to the original diagnoses in three of these patients were ameliorated by surgical treatment one patient died of subacute bacterial endarteritis and dissecting aneurysm eight months after resection

Adequate physical examination of the peripheral vascular system is essential to the diagnosis of this condition

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THE SCIENTIST AS A CITIZEN

We are indeed fortunate that whatever may be revealed in the field of medicine will be free for the use of all mankind regardless of political affiliations religious convictions or national boundaries. Medicine does not hold its achievements. No true physician has ever patented a medical discovery. No one has ever denied its use by friend or enemy. Only armed conflict between nations with differing political beliefs has ever imposed restraints upon the results of medical investigation. Even then the individuals who waged war who were enemies only by accident ministered to the sick and wounded whether they were friend or foe.

In countries outside the iron curtain even where varying degrees of government control hover over medical practice there are few restraints upon the individual physician who seeks truth wherever he may find it and gives freely of his labors to mankind. The only assurance we can have that this privilege to serve will continue is an enlightened citizenry who understands the principles of individual liberty and creativeness.

Because of the intimate contact with the ills of men physicians have gained an enviable position of respect and confidence among men. This trust obligates them to become disciples of the philosophy of individual freedom in order that patients do not become apathetic to the cause of the miracles of modern medicine.

—J R SCHENKEN M D
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EVALUATION OF PSYCHIATRIC SCREENING OF ENLISTED WAVES

SHELTON P. SANFORD *Captain (MC) USN*
CHARLES W. SOCARIDES *Lieutenant (MC) USNR*

THE WAVE Recruit Neuropsychiatric Unit, described in a previous report,¹ was established in November 1951 to conduct psychiatric screening as well as to supervise the mental hygiene and investigate the emotional problems of women recruits undergoing military training. Now, some three years later, it seems advisable to evaluate its effectiveness. Separate from the U. S. Naval Hospital, the unit was designed to deal only with those persons who exhibited character and behavior disorders such as pathologic personalities and immaturity reactions, and those who were unable to respond favorably to military duties. Patients with more serious emotional difficulties or with psychotic disorders were transferred to the naval hospital for medical discharge. There appeared to be a necessity for the evaluation of WAVE recruits away from their companies in a special evaluation unit. In addition, it was deemed necessary that the psychiatric standards previously set up for screening men be applied to women also. The present "Psychiatric Unit Operational Procedure Manual" reflects this and makes a provision for an observation ward for WAVE recruits.

In 1953, in summarizing the advantages of the Unit, I pointed out that through the Unit's services "the transition between military life and return to civil life is softened to some degree, especially in Waves with a sense of failure, guilt, or shame at being found unsuitable for further military service. Severely ill recruits with suicidal tendencies, severe depressive reactions, or schizophrenic attacks are detected and hospitalized. During the period of evaluation and observation on the ward, emotional difficulties can be explored and, in some cases, brief psychotherapy may be effective in returning a recruit to duty."¹ The emphasis was on early detection and, therefore, possible prevention of serious emotional disturbances. Prompt relief from the burden of military duty was deemed to have definite therapeutic value to this end. As the discharge was for "unsuitability" under honorable conditions, it was important that only

those considered able to return home safely be included. Those suffering from major neuroses or psychotic reactions were hospitalized.

NEED FOR OBSERVATION PERIOD

As the program progressed it soon became evident that every patient admitted was an unknown quantity and that an adequate period of evaluation for purposes of proper disposition and to fulfill medical responsibility was of the utmost importance. It also became apparent that in the best interest of the recruit's health and welfare she should be subjected to a period of close scrutiny and observation. The benefits to the Navy appear to be substantial. Of 315 recruits admitted to the Unit during 1953-57 (18.1 percent) were returned to duty after brief psychotherapy while 25 (7.9 percent) found to be suffering from severe clinical neuroses or psychoses were hospitalized.

We have derived a number of secondary benefits over the past two years. One is the increasing awareness of the company commanders and the officers of the WAVE Recruit Training Command of the mental hygiene facilities that are at their disposal. The emotionally maladjusted, the problem children, and the potential offenders against military law are referred to the WAVE Recruit Neuropsychiatric Unit for study and recommendations as to disposition. The psychiatric unit therefore becomes closely integrated with the WAVE recruit training program. It appears that WAVE recruit training is becoming better able to remove from training those persons who find military service an intolerable emotional burden, those who become chronic disciplinary offenders, the so-called psychosomatic cases, the accident-prone, and others with evidence of emotional instability. It may be stated that disciplinary offenders may be best managed by anticipating them, that is, by studying recruits psychiatrically and determining if they are amenable to change. In this function the psychiatric unit is careful not to assume a disciplinary role. Deep-seated behavior disorders do not respond to short-term therapy and discharge on grounds of unsuitability may be advisable.

RESULTS OF OBSERVATION

About half of all incoming WAVE recruits screened on the examining line in 1952-1953 (table 1) were placed on trial duty pending further interviews and close observation of performance. In 1952, from this "suspect" group 287 (65 percent of all recruits screened) were admitted to the Unit for more detailed evaluation. This eventuated in discharge from the Navy by the Aptitude Board of 218 (49 percent), return to duty of 37 (0.8 percent), and transfer to a naval hospital of 18 (0.4 percent). In

1953, 315 (11.0 percent of all recruits screened) were admitted, 239 (8.4 percent) were discharged, 57 (2.0 percent) were returned to duty, and 25 (0.9 percent) were hospitalized.

The increase in the rates of admission and of discharge, it is believed, is due partly to a clearer definition of the criteria for unsuitability and partly to increased awareness throughout the WAVE recruit training command of the facilities available for the detection of unsuitability.

TABLE I *Disposition made of recruits screened on examining line*

	1952		1953	
	Number	Percent	Number	Percent
Total examined	4 408	100	2 855	100
Cleared for duty	2 338	53.0	1 277	44.7
Placed on trial duty	2 070	47.0	1 578	55.3

All recruits who were discharged had demonstrated sustained poor performance in training. This was a result of their having developed into certain personality types that could not adjust satisfactorily to military life. At times discharge was recommended despite motivation to continue in the WAVES, because the recruit was unable to fill a Navy billet with a reasonable chance of success. This was a move in decreasing future neuropsychiatric casualty rates. In its wider sense, the term "neuropsychiatric casualty" includes patients with psychosomatic symptoms as well as chronic disciplinary offenders, sick bay addicts, and actual psychiatric patients. These persons offer little of a constructive nature to the functioning and efficiency of the WAVES. This latter point is adequately summarized in the following: "They contribute nothing through their own efforts, distract and hinder their shipmates, and lower the effective combat potential of the service."²

The alternative to removal of "unsuitable" recruits who view discharge from the service as a further failure is to retain them in the service, hoping that the Navy will be a therapeutic experience. Hunt and associates³ offered scientifically acceptable validation for naval screening as practiced during World War II. The prediction was made that the more men who were eliminated from each recruit sample through neuropsychiatric screening, the less would be the subsequent neuropsychiatric attrition during service. The results verified the hypothesis and confirmed

the basic validity of the Naval Selection Program. In a further article by Hunt and associates the question of the borderline case was evaluated. A study was made of 537 such borderline recruits each of whom served successfully for three years with subsequent honorable discharge. Nevertheless a careful study of the medical and service records of these "borderline men" showed from four to seven times as much hospitalization and from two to six times as many major disciplinary infractions during their service as did a normal control group. In these persons a most careful clinical evaluation is necessary for proper disposition and possible salvage.

CAUSES OF PSYCHIATRIC BREAKDOWN

While Navy life as a therapeutic experience cannot be ruled out, life experiences themselves being known as curative factors even in some clinical neuroses, it also is clear that people become ill not only because of burdens placed on them by others but because of those they place on themselves for whatever conscious or unconscious reasons. Whenever poor performance in training or maladaptive behavior reveals that the balance of adaptation is tottering, termination of service is in the best interest of the recruit. Military life, even with some of its emotional compensations (security through obedience, dependence on authority figures, et cetera) may be compared to a rather rigidly defined system of possible responses to the frustration of inner needs and desires, both of the normal or neurotic variety. As one recruit put it: "What upsets me the most about it is that in college periodically I would stay in bed for days with my daydreams, and then suddenly all my problems would disappear and I would be all right. If we could only do that here I would be fine." In the elastic environment of civilian life such actions are possible, and by these escape measures a person's emotional equilibrium may be maintained for years. In addition, pathologic personality types, as products of prolonged development, are not easily subject to change and do not demonstrate the flexibility of some neurotic or even transiently psychotic patients, who with brief psychotherapy could possibly fulfill their duties a great part of the time.

It is perhaps worth while to comment on the clinical picture of the diagnosis of inadequate personality, which is the second most frequent diagnosis making for discharge on grounds of unsuitability for WAVE recruits (18 percent of discharges in 1950, 30 percent in 1953). Persons with inadequate personality are described as characterized by inadequate response to intellectual, emotional, social, and physical demands. They are neither physically nor mentally grossly deficient on exami-

nation, but they do show inadaptability, ineptness, poor judgment, and social incompatibility." In our experience with and study of these persons, they appear on clinical examination to be in the chronic inhibitory phase of early neurosis production. In the development of neuroses the early onslaught of fear and guilt leads to a state of inhibition, either in specific areas of functioning or in all areas of behavior (social, sexual, competitive, group membership, et cetera). This paralysis through fear is a neurotic maladaptation of instinctive "freezing," a phenomenon basic to all organisms as a passive defense against danger. If continued it may be called a chronic inhibitory state, and results in a lack of knowledge and skill in the manipulation of tasks, together with an accompanying dearth of affective responses to new tasks and past failures. This appears to be one explanation of the symptom picture of the so-called "inadequate personality."

EFFECTIVENESS OF THE PROGRAM

In order to assess the effectiveness of the WAVE Recruit Psychiatric Screening Program a follow up study was made of all those Waves who had been "cleared" by this facility, were allowed to graduate with their companies, and had assumed their duties in various billets in the Navy. Beginning in November 1951 all enlisted female naval personnel underwent recruit training at this naval center so that this sample includes all incoming enlisted female naval personnel. The first 18 months of operation of the WAVE Neuropsychiatric Unit were chosen for the study and the psychiatric casualty rate was compiled from 1 January 1952 to 31 December 1953. This period of time allowed each graduated recruit to serve for from six months to two years on actual duty in a Navy job.

An examination of the data reveals the following:

1. During the period 1 January 1952 to 30 June 1953 a total of 5,880 WAVE recruits were screened psychiatrically by the neuropsychiatric unit. Of these, 350 (6.0 percent) were discharged under honorable conditions before the completion of recruit training, by the aptitude board because of unsuitability for military service. An additional 37 (0.6 percent) were hospitalized, upon the recommendation of this Unit and the general medical dispensary, for major neuroses and psychoses. Those "cleared" for duty by the psychiatric department numbered 5,493 (93.4 percent) of all incoming WAVE recruits. This includes those cleared on initial screening, those placed on furlough and those later admitted to the unit for evaluation and subsequently returned to duty.

TABLE 2 Psychiatric illness in naval and defense personnel during 1952 and 1953

Ill	R	Type	R		Typ		T tal	
			N mb	P	Numb	P	N mb	P
Psych	sch ph	Smpl H b phr C ta Par d L U l f d	19	114	2 1 3 4 4 5	12 06 18 24 24 30		
T l							19	114
Psych ur	Aty C Ob e mpul N u d p Soma u (p y h s)	Sk ul k l tal M A h O her	12 3 1 5 5	73 18 06 30 30				
T tal							26	157

TABLE 2 *Psychiatric illness in naval enlisted female personnel after completion of recruit training during 1952 and 1953—Continued*

TABLE 2 Psychiatric illness in naval air crew female personnel

Illness	Reaction	Type of reaction	Reaction		Type		Total	
			Number	Percent	Number	Percent	Number	Percent
Character and behavior traits	pathological personalities	Schizophrenia Paranoid Cyclothymic Inadequate Autosomal	27	16.4	14	8.5		
					1	0.6		
Total	Immaturity reactions	Emotional instability Passive-dependent Passive aggressive Aggressive	91	55.3	59	35.8	118	71.7
					8	4.9		
Transferential	Acute situational maladjustment		2	1.2	21	14.0	2	1.2
					1	0.6		
Grand total							165	100.0

Follow-up period six months to two years

Most patients with minor complaints who are watched carefully for the development of significant illness quickly recover without incident. Nevertheless occasionally a patient with a headache and malaise will develop atypical pneumonia or a patient with muscular discomfort will develop poliomyelitis. When one has observed the development of a disease from its earliest stages one has enhanced one's understanding of the entire morbid process.

ORGANIZATION

Unlike the other services the Navy must maintain hundreds of small mobile often isolated medical facilities. Each department is the responsibility of a medical representative only a few of whom are physicians. For the physician in such a situation a paradox is implicit. At sea he may be called on to perform tasks for which he is not qualified simply because he is the *most* qualified person available. On the other hand when in port he may deem it necessary to send a patient to a hospital not because the clinical problem exceeds his competence but because of the limitations of his sick bay.

It is important that the physician recognize this contradictory state of affairs. He must remember that he is a member of an organization primarily military secondarily medical that has the structure of a strict hierarchy. Under him are the enlisted medical representatives of other ships to whom he owes assistance and consultation above him are the physicians of shore based facilities who owe him the same allegiance. That this arrangement may at times violate his concept of ideal organization is of no importance it is the only practicable *modus operandi* for naval medicine. If at times he regrets the temporary loss of stimulation from professional colleagues he must realize that this is an inescapable consequence of being a member of a mobile unit. If at times he resents the loss of personal identification as being known as the medical officer rather than as Dr. Jones he must appreciate that this is merely the result of playing a role in which there are frequent changes in cast.

From time to time the physician meets tacit expression of the all too-human conclusion "what is free must not be worth much" and the therapeutic value of a fee becomes patent. It is distasteful to coddle (as one must) some patients to care for them in spite of themselves it is unpleasant to teach potential patients to expect such procedure and to disavow any responsibility for their own health. But just as shipboard life is social so is shipboard medicine socialized. It cannot be otherwise. And if the doctor attempts to force his duties into the ways of private practice he not only impairs his efficiency

but creates unnecessary difficulties. Whatever the physician's conclusions about this type of medicine, they shall represent personal experience rather than a simple parroting of the phrases of self-proclaimed experts.

What diseases the medical officer elects to treat aboard ship will depend on his training, the training of the men in his department, the facilities of his sick bay, and the location of his ship. He will discover his decisions constantly changing. Looking back with more experienced judgment, he will find that some patients were sent to a hospital unnecessarily, while other patients had been treated aboard ship with unjustifiable risk. Early in his career he will observe the need to treat ailments in the sick bay that in civilian practice he would treat at home. This is readily understandable when one considers that the enlisted man's private living space may consist of a small locker and a bunk near the overhead. Furthermore, even the simplest adjuncts to home treatment—thermometer, basin for soaks, et cetera—are not in his possession but must be obtained from or used in the sick bay. The policy of treatment of a minor illness in the sick bay is reinforced by the increase in danger of contagion as a result of the crowded condition of living quarters.

Shipboard medicine offers varying opportunities for the practice of one's specialty. At one extreme the obstetrician must content himself with activities outside his chosen specialty, at the opposite end of the spectrum the physician interested in environmental medicine encounters an unexcelled field in which to use his talents. To the recent graduate whose experience has been limited to large hospitals, duty as ship's doctor can be enlightening. He may discover that specialty X in the supervised setting of a medical center where cases are highly selected is quite different from specialty X practiced alone aboard ship at the "grass roots" level of medicine. Whatever their special interests, there are few physicians who cannot profit from the challenges that are presented daily.

ADMINISTRATION

The administrative duties of the physician are many, for he has the responsibilities of a naval officer in general and of a department head in particular in addition to those of a medical man. The conferences he attends and the directives he reads may seem tedious and even superfluous until experience demonstrates, perhaps harshly, that the business of every department is his business too. If the engineering department cannot properly distill water, if the supply department cannot properly preserve meat, the physician is quickly affected. If an open hatch is left unguarded, if paint is improperly stored, a medical disaster may occur. Each department on the ship is dependent upon

every other an appreciation of which should increase one's determination if not one's relish in the discharge of administrative duties

Medical matters blend imperceptibly with administrative matters, and it is in this area that the clinician may find himself seemingly at cross purposes with lay authority. When such a situation arises, however, it is generally more apparent than real and has its origin in the ignorance of one or both parties. For a variety of reasons one may be disinclined to explain one's decisions, but it is important to remember that the most obvious medical exigency is often obscure to the layman concerned. Viewed in the light of mutual advantage there are few conflicts that cannot be resolved. The needs of the physician are rarely if ever contrary to the needs of the ship.

Even paper work—some of it—has its rewards. In few documents other than the Health Record can the physician find a minute account of his patient's periods of health as well as of disease, his inoculations, his blood type, his identifying marks, and his religion. Such information instantly available not only saves time but promotes accuracy. Custody and adjunction of medical records are a small price to pay for the benefits derived. Similarly, the performance of accounting procedures in itself unpleasant, is effective in hyposensitizing the physician to his natural aversion for bookkeeping, an almost universal *bote noire* among physicians.

The physician lacking pedagogic talent, inclination, and experience finds himself a teacher. His duties are two: to ensure a knowledge of first aid among the crew and to increase the competence of the men of his department. Happily, because teaching is a method of learning, the latter aim is partially fulfilled when the hospitalmen are delegated responsibility for the crew's instruction. Beyond that, the hospitalmen's training is the duty of their medical officer. He in turn will profit from discussing common clinical problems and principles of treatment as he discovers scotomata of his own.

If he has had no previous military duty, the shipboard doctor likely will be quite innocent of the problems and gratifications of leadership and personnel management. Perhaps in no other fields is the adage so true that experience is the best teacher, and aboard ship is as good a place as any to gain that experience. A case in point is the omnipresent senior enlisted man who, having devoted his career to the Medical Corps, is eager to help, however subtly, the tyro medical officer with the intricacies of administration.

VOCATIONAL INTERESTS OF MEDICAL ADMINISTRATIVE OFFICERS

ANTHONY C. TUCKER *Colonel MSC, USA*

SINCE the establishment of the Medical Service Corps in 1947 an increasing proportion of the administrative, logistic, and tactical work of the Army Medical Service has been assigned to officers of that corps. This trend will probably continue, primarily because of the emphasis on using physicians for professional duties. The effectiveness of these Medical Service Corps administrative officers is, therefore, closely related to the ability of the Army Medical Service to carry out its mission.

There has now been sufficient experience at all echelons to warrant making studies of the characteristics of effective officers in these assignments. The results of such studies should be helpful in career guidance and in making assignments. This study is concerned with only one aspect of the personal qualities of these officers, namely, their vocational interests. Before considering any results the device which was used to measure these vocational interests will be discussed briefly.

THE STRONG VOCATIONAL INTEREST BLANK

The Strong vocational interest blank¹ has been used for over 25 years to measure the degree to which a man's interests correspond with those of successful men in certain selected occupations. Interests, as measured by this method, appear to be permanent during the period of a man's life covered by a military career. There is also substantial evidence that men do tend to enter, and to remain in, occupations for which their own interest scores were high. That is, the scores obtained by those completing this blank appear to predict job-satisfaction and willingness to continue in a certain line of work.

This score does not measure ability or aptitude but rather the likes and dislikes of a large number of everyday items. Any use of these scores for career guidance should be supplemented by evidence of the man's ability to perform on the particular job.

¹From Army Medical Service Graduate School, Washington, D. C. Col. Tucker is now assigned to the Office of Armed Forces Information and Education, Department of Defense, Washington, D. C.

The Strong vocational interest blank is scored on 45 occupational scales. The results are reported as standard scores which were established for each scale by setting the mean raw score of the group on which the scale was standardized equal to 50 and the standard deviation equal to 10. Letter ratings from A to C are also used to indicate degree of interest. An A rating corresponds to standard scores of 45 and above, a B plus rating to scores of 40-44, a B rating to 35-39, a B minus to 30-34, and a C rating includes scores of 29 and below.

In understanding the meaning of scores on these scales it may be helpful to consider what proportion of a standardization group would probably receive each rating. For example, it would be expected that the scores made by physicians on the Physician Scale would be distributed approximately as follows: A (45 and over) 70 percent, B plus (40-45) 15 percent, B (35-39) 9 percent, B minus (30-34) 4 percent, and C (29 and below) 2 percent.

For the person completing the blank, an A rating can be considered to mean that he has the interests characteristic of men successfully engaged in that occupation. With a B plus rating he has less assurance that he has such interests. Ratings of B and B minus should raise serious doubts as to whether or not he has these interests. A rating of C indicates he does not have the interests of men in that occupation.

300 OFFICERS STUDIED

The group of Medical Service Corps officers selected for study consisted of 300 Regular Army officers who had performed satisfactorily in administrative assignments for at least five years. A total of 280 of these officers completed the Strong vocational interest blank and were sent a report of their own scores on the 45 occupational scales.

Table 1 shows the average scores for the Medical Service Corps administrative officers on each of the 45 occupational scales. It is readily apparent that these officers do not have interests similar to physicians, nor to any of the scientific professions as indicated by the scores on the first 12 scales. These officers as a group also definitely do not have the interests of the following occupational groups (mean score 29 or less): carpenter, city school superintendent, minister, musician, certified public accountant, partner, advertising man, lawyer, or author/journalist.

More important in describing the vocational interests of this group are the occupational scales on which they obtained high scores. There are seven scales on which these Medical Service Corps administrative officers had average scores of 40 or higher, namely: production manager, army officer, personnel manager, public administrator, senior certified public accountant, junior

accountant, and office worker. In these occupations the average Medical Service Corps administrative officer would probably find men who are interested in the same things that interest him.

TABLE 1 Mean scores of 280 Medical Service Corps administrative officers

Scale	Mean	Scale	Mean
Artist	13	Public administrator	47
Psychologist	23	Vocational counselor	39
Architect	16	YMCA secretary	31
Physician	25	Social science teacher	37
Psychiatrist	28	City school superintendent	29
Osteopath	32	Minister	20
Dentist	21	Musician	21
Veterinarian	25	Certified public accountant partner	27
Physicist	9	Senior certified public accountant	42
Chemist	22	Junior accountant	40
Mathematician	13	Office worker	44
Engineer	27	Purchasing agent	39
Production manager	41	Banker	36
Farmer	34	Mortician	36
Carpenter	23	Pharmacist	34
Printer	32	Sales manager	37
Mathematics science teacher	36	Real estate salesman	36
Policeman	39	Life insurance salesman	33
Forest service	32	Advertising man	29
Army officer	41	Lawyer	28
Aviator	34	Author-journalist	24
YMCA physical director	35	President	31
Personnel manager	41		

(Standard deviation = 10)

Scale with means of 40 or over

To sum up, the picture we get of the average Medical Service Corps administrative officer in this group is that he has many interests in common with men in the managerial, administrative, personnel and accounting fields and that he has interests in common with other Army officers. His interests are strikingly different from those of physicians and men in other scientific professions.

Based on each officer's military occupational specialty it was possible to place him in one of four groups according to his pres-

ent primary duty (1) general administrative (2) supply (3) personnel, and (4) staff officer in higher headquarters. The mean scores of these groups on each of the seven occupational scales on which these officers had high average scores are shown in

TABLE 2 Mean pattern of occupational duty

Scale	General administrative	Supply	Personnel	Staff officer in higher headquarters
	N 110	N 86	N 43	N 41
Production manager	41	43	39	41
Army officer	40	41	41	41
Personnel manager	42	40	42	42
Public administrator	47	47	48	48
Staff officer in higher headquarters	42	43	41	43
Junior unit	39	41	39	40
Officer in unit	43	44	45	44

(Standard deviation approximately 10)

Number of respondents

table 2. The supply group tends to be higher on the production manager scale and the personnel group tends to be slightly higher on the personnel manager scale. However the differences are all small and it appears reasonable to assume that administrative officers in different assignments have about the same vocational interests.

TABLE 3 Mean pattern of rank

Scale	Captain	Major	Lieutenant Colonel	Colonel
	N 41	N 99	N 124	N 16
Production manager	43	43	40	39
Army officer	44	42	40	30
Personnel manager	42	42	41	36
Public administrator	48	47	48	43
Staff officer in higher headquarters	44	43	42	37
Junior unit	39	40	40	36
Officer in unit	43	44	44	41

(Standard deviation approximately 10)

Number of respondents

In table 3, mean scores on these seven occupational scales are shown for the officers grouped by rank. In this table the differences are negligible until the colonel group is reached. There are many possible explanations of the lower mean scores of the colonel group. With only 16 officers in this group these mean scores are not very reliable. This study does not supply enough information to explain these low scores.

TABLE 4 *Distribution of scores on the occupational scales*

Letter tag	Medical Service Corps Administrative Officers	Army command and staff medical officer	Physician in general
	N 280	N 67	N 100

Public Administrator Scale

	Percent	Percent	Percent
A	63	58	21
B+	18	21	16
B	12	14	18
B-	5	6	26
C	2	1	19

Personnel Manager Scale

	Percent	Percent	Percent
A	40	40	5
B+	16	21	8
B	18	1	17
B-	14	17	10
C	12	21	60

Physician Scale

	Percent	Percent	Percent
A	3	27	73
B+	6	6	11
B	12	18	8
B-	13	13	5
C	66	36	3

N, number of men completing test

In a previous study,² scores on certain occupational scales were obtained for two other groups which may be of interest in the present

ent study. A group of medical officers doing command and staff duties was selected by the Surgeon General of the Army to represent Medical Corps officers who are primarily performing these duties rather than dealing directly with the care of the sick. A physicians in general group was selected to represent all practicing physicians in this country.

In table 4 the Medical Service Corps group, the army command and staff medical group, and the physicians in general group are compared on three occupational scales. The percentage of each group obtaining each letter rating on each scale is shown. For example, on the public administrator scale, 63 percent of the Medical Service Corps officers obtained scores of 45 or over, that is, an A rating; 18 percent scored 40-44, that is, a B plus rating; et cetera.

It is apparent from table 4 that the scores of army command and staff medical officers on the public administrator and personnel manager scales are much more similar to the Medical Service Corps administrative officer group than to the physicians in general group. Even on the physician scale these Medical Corps officers are very different from the physicians in general group. In other words, it appears that many of the interests of the Medical Service Corps administrative officers are very similar to those of the Medical Corps officers doing command and staff work, but are quite different from those of the average physician.

SUMMARY

Strong vocational interest blanks were completed by 280 Medical Service Corps officers of the Regular Army with at least five years' experience in administrative assignments. The results indicate that the following statements can be made about these officers: (1) Their interests are similar to those of men in the administrative occupations and to other Army officers; (2) their interests are strikingly different from those of physicians and men in other scientific professions; and (3) their interests are somewhat similar to Medical Corps officers in command and staff assignments.

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HELICOPTER EVACUATION IN KOREA

SPURGEON H NEEL Jr *Lieutenant Colonel MC USA*

HELICOPTER evacuation as much as any other single factor, was responsible for the reduction of mortality among the wounded in Korea to the phenomenal figure of only 2.4 percent, the lowest of any major military campaign to date. Actually, the concept of utilizing rotary wing aircraft for the evacuation of seriously wounded casualties is not a new one. In 1936 at the Medical Field Service School Carlisle Barracks Pa., an autogyro was field tested as an evacuation vehicle. The idea was discarded at that time for engineering and budgetary reasons more than any defect in the basic concept. During World War II the Air Force and Navy began to use helicopters for the rescue of pilots and other personnel lost at sea or in inaccessible terrain. This innovation was further developed during the interim period between World War II and the Korean incident.

It was in Korea, however, that helicopter evacuation became a reality. This final fulfillment of an old concept of the Army Medical Service had to wait for two developments. The first was the acceptance of the helicopter as an organic vehicle of the Army and the second was the need for such an aircraft to surmount the many difficulties unique to the geography of Korea. The first problem was mastered by helicopter manufacturers and far sighted logistical agencies in time to answer the requirements established in Korea.

It is advantageous to examine briefly the evolution of helicopter evacuation in Korea with particular emphasis on medical lessons learned. Inasmuch as Korea represents the only large scale, field test of helicopter evacuation under combat conditions, it should indicate trends of value to the Army Medical Service in the development of organization doctrine and procedures for the future. The clinical aspects of helicopter evacuation have been presented in a previous report.¹

THE BEGINNING IN 1950

Helicopter evacuation in Korea was not the result of any pre conceived plan. It was the result of expediency. In the early

1. H. Neel, Jr., *Warfare*, 30th Medical Group, APO 301, San Francisco, Calif. C. I. Neel
now stationed at the Office of the Surgeon General, Department of the Army, Wash-
ington, D. C.

days of the Korean conflict, a helicopter detachment of the Third Air Rescue Squadron began to receive requests from ground elements for the evacuation of casualties from difficult terrain inasmuch as this detachment was not fully occupied with its primary mission of rescuing pilots downed over water or behind enemy lines it responded to these calls. By August 1950 this United States Air Force unit was answering so many calls that it found itself in the medical evacuation business.

Quick to note the advantages of helicopter evacuation in terrain such as Korea the Eighth Army developed an increased interest in the program. During a significant test conducted by Army and Air Force representatives on 3 August 1950 in the school yard of the Taegu Teachers College Army helicopters were adopted for the evacuation of casualties and the first procedures were established. On 22 November 1950 the Second Helicopter Detachment arrived in Korea. This unit equipped with four H 13 aircraft and initially assigned to the 47th Light Aviation Maintenance Company spent the remainder of the year in an intensive training program.

DEVELOPMENTS IN 1951

Army helicopter evacuation was officially established on 1 January 1951 when the Second Helicopter Detachment became operational and was attached to the 8055th Mobile Army Surgical Hospital. In January 1951 two more helicopter detachments the Third and Fourth arrived in Korea with minimum operating personnel and four H 13 aircraft followed in February by the First Helicopter Detachment. At this time all helicopter detachments used in medical evacuation were assigned to the 8085th Army Unit, Eighth Army Flight Detachment and attached to forward surgical hospitals.

The early days of the helicopter evacuation detachments were very stormy reflecting the chaos in Korea in the first part of 1951. The Fourth Helicopter Detachment attached to the First MASH suffered a complete breakdown of all its aircraft and had to be returned to a rear area for re equipping. It did not become operational until 9 March 1951. The First Helicopter Detachment which arrived in Korea in late February was stripped of its four H 13 aircraft in March because of more critical operational requirements. Two weeks later it was given two replacement H 23 models but the next day had to lend one to an engineer group. When this aircraft was returned in April it was immediately sent to an ordnance aircraft maintenance battalion and the second aircraft transferred to the Korean Military Advisory Group. This detachment although operational under the Eighth Army Flight Detachment had still flown no combat evacuation missions.

The three operational detachments, despite recurring maintenance problems involving faulty cooling fans, tail rotor cables, spark plugs, transmissions, and bearings, shortages of high octane fuel and inadequacy of spare parts, performed their mission exceptionally well. With a total of only 11 aircraft they evacuated 1,985 patients during the first six months of 1951. These detachments contained only minimum pilots and supporting personnel, and there was wide variation in their organization. The impressive record of these detachments, despite their many difficulties, is a tribute to the officers and men who staffed them.

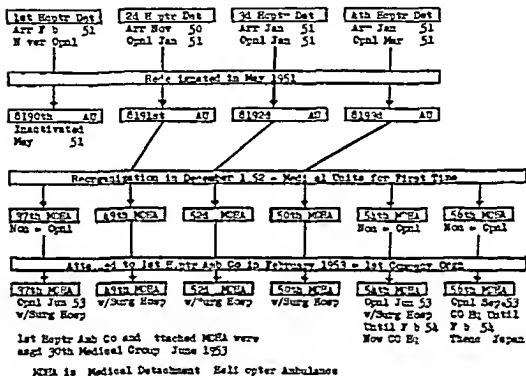


Figure 1 Genealogy of medical helicopter units in Korea

On 14 May 1951 all helicopter detachments were redesignated as army units (AU). Figure 1 reflects the genealogy of medical helicopter units in Korea. The First Helicopter Detachment (or 8190th AU), which still had not flown a combat evacuation mission, became nonoperational on 14 May 1951, and its personnel and equipment were transferred to the three operational detachments. In the early months of 1951 the fluid main line of resistance (MLR) required frequent displacement of the mobile army surgical hospitals and their attached helicopter units. With the partial stabilization of the MLR in mid 1951 the hospitals with their helicopter units settled into more permanent positions. Despite all the difficulties encountered, the three operational detachments evacuated 5,040 casualties during the first 12 months of operation, logging a total of 4,421 hours of flying time.

Table 1 is a recapitulation of the evacuation record during 1951 by unit and by month

TABLE 1 M d l hel c pt uat K a 1951

M th	2d H l c p D r a h m e t 8191 AU	3d H l c p D r a h m e t 8192 AU	4th H l c p D r a h m e t 8193 AU	T tal
J uary	60	18	--	70
F b u a y	173	42	20	235
M a h	210	161	100	471
A p r l	169	46	208	423
M a y	111	66	275	452
J u n	101	78	155	334
J l y	72	79	75	226
A g u s t	166	234	82	482
S p t m b e	224	309	139	672
O c t b e	221	477	429	1127
N o v m b	67	166	86	319
D e c m b e	87	69	73	229
T t l	1661	1737	1642	5040

ORGANIZATION DURING 1952

Tables of Organization and Equipment (T/O&E) 8 500 dated 25 August 1952 established the helicopter ambulance unit. On 2 December 1952 the provisions of this new T/O&E were implemented within the Eighth Army. On that date the Army units representing helicopter evacuation detachments were inactivated and from their personnel and equipment were established the 49th 50th and 50d Medical Detachments Helicopter Ambulance. Until that date all helicopter evacuation units had been assigned to the 8085th AU Eighth Army Flight Detachment and attached to mobile army surgical hospitals. Subsequent to that date helicopter evacuation elements were under the administrative as well as operational control of the Eighth Army surgeon. The medical helicopter ambulance detachments were recognized as medical units—a goal that had long been set by the Army Medical Service.

PROGRESS IN 1953

Since the outset of the Korean campaign the inadequacy of the cellular organization of helicopter evacuation units has been recognized. Many of the early problems of these units can be traced to a lack of centralized control and unnecessary duplication of effort. On 3 February 1953 the First Helicopter Ambulance Company (Provisional) was organized, and the scattered, small cellular detachments were welded into an integrated smoothly functioning team. The company initially consisted of

the three operational detachments, plus the newly activated 37th Medical Detachment, Helicopter Ambulance

TABLE 2 *Medical helicopter evacuation in Korea, 1952 1953 (combat)*

Month	1952	1953
January	516	345
February	314	281
March	332	374
April	376	516
May	639	721
June	915	1273
July	945	1225
August	737	—
September	892	—
October	910	—
November	825	—
December	522	—
Total	7923	4735

On 1 June 1953, the First Helicopter Ambulance Company (Provisional) was assigned to the 30th Medical Group, the agency responsible for all evacuation within Eighth Army. Subsequent to this assignment, two additional helicopter ambulance detachments, the 54th and 56th, were organized. These latter two units were not operational during the period of hostilities. On 29 August 1953, the first five Medical Service Corps pilots reported in Korea and were assigned to the First Helicopter Ambulance Company. Prior to that time all medical helicopters had been flown by Armor Artillery, Infantry, Engineer, and Signal Corps officers. The capabilities of these line officers in their role as medical evacuation pilots is reflected in table 2 which recapitulates the evacuation record by month for 1952 and the first seven months of 1953. As more Medical Service Corps pilots became available, line officers were released to their parent branches of the service.

Though the combat evacuation mission was completed with the cessation of hostilities, emphasis was shifted to the evacuation of seriously ill and injured patients. During the peak of hemorrhagic fever incidence, the atraumatic nature of helicopter evacuation was clearly demonstrated. Casualties brought to the special treatment center by helicopter presented a greatly reduced morbidity and mortality rate. The ready availability of helicopter transportation permitted the economical storage of whole blood at the army medical depot and its forward medical supply points. When required, blood could be moved rapidly to forward treatment facilities. Both medical and transportation

helicopter units were used extensively during the exchange of prisoners of war. Medical helicopters proved very effective in the movement of patients between army medical installations and the U S Navy hospital ship offshore.

THE SITUATION IN 1954

The 56th Helicopter Ambulance Detachment was transferred to Japan on 1 February 1954. Only troop spaces needed for the establishment of a special aviation school were transferred; personnel and equipment were not moved from Korea. The 54th Helicopter Ambulance Detachment, based at Headquarters 30th Medical Group, provided the overhead for the provisional company organization. This unit also was responsible for air evacuation to the rear of the forward surgical hospitals. The 30th Medical Group and Eighth Army medical section with aviation staff support and field tested certain items of auxiliary helicopter equipment. The remaining four helicopter ambulance detachments were located at the four operational surgical hospitals.

Helicopter ambulance detachments are Army Medical Service units, assigned to the 30th Medical Group, attached to the First Helicopter Ambulance Company, based on compounds of surgical hospitals and under the dispatch control of corps or senior area surgeons. While this organizational structure may appear complicated, it proved most effective in Korea. With one exception, all pilots in the First Helicopter Ambulance Company were Medical Service Corps officers. The exception, an artillery captain and the company commander, has been retained due to his experience and his value as a staff advisor in the tactical aspects of the helicopter evacuation program.

In the early months of 1954 the shortage of officers of the Medical Corps became acute in Eighth Army, requiring the closing of certain medical treatment facilities and consolidation of others. Increased emphasis was placed on bringing the patient to the doctor. Medical helicopters with qualified Medical Service Corps pilots again demonstrated their worth. Now it was practical to pick up injured personnel at the scene of accidents and bring them rapidly to the proper medical treatment facility. The medical training of the Medical Service Corps pilots, supplemented by additional instruction in Korea, enabled them to give effective first aid prior to evacuating patients to a facility staffed with a physician.

SUPPLEMENTAL EVACUATION

While it is accepted that forward helicopter evacuation is the mission of the Army Medical Service, the contribution of other aviation agencies cannot be over-emphasized. Auxiliary support

by the U S Air Force, Marines, and Army Transportation Corps, increased both the flexibility and over all potential of helicopter evacuation. Helicopters organic to major tactical commands were also used from time to time for evacuation within division areas. Throughout the hostilities, and during the subsequent interim period, the Marine Corps maintained the capability of evacuating their own casualties to either a Navy hospital ship or supporting Army medical installations.

Specially equipped cargo helicopters of the Air Force proved invaluable in the pickup of patients from isolated areas, particularly when over water flights were involved. Improved navigational instruments, flotation gear, and other impedimenta not available to the Army Medical Service enabled the Air Force to accomplish such missions with greater speed and a greater margin of safety. In each case evacuation requests were received and processed by the Army Medical Service, and those beyond the capability of currently available helicopters were referred to the appropriate supporting agency for execution. This helicopter evacuation team, under the guidance of the Army Medical Service, proved most effective and is a primo example of interservice co operation.

Of particular value was the contribution of the Army Transportation Corps. While the mission of its helicopter elements is stated as "to provide short haul air transport to expedite tactical operations and logistical support in forward areas of combat zones," these units accomplished an additional air evacuation mission. In the closing five months of the war, one Transportation Corps helicopter company, equipped with H 19 aircraft, evacuated a total of 701 casualties. Another, in action only two months, evacuated a total of 1,547 patients. During one particularly heavy period of combat in an inaccessible area, this company evacuated 723 patients in one three day period, moving 301 patients in a single day. The greater capacity of the H 19 aircraft make them particularly effective in convoy or mass evacuation. This auxiliary form of helicopter evacuation will prove invaluable in the future.

PRINCIPLES ESTABLISHED

The experiences gained in Korea cannot be denied. It proved to be the testing ground of many new logistical concepts and procedures. One of the foremost was the evacuation of casualties from forward combat areas by helicopter. While the limitations imposed by the Korean conflict must be accepted, experiences documented here and in other articles must be critically reviewed with an eye to the future. The following lessons have been learned concerning helicopter evacuation.

Organization Observers in Korea were convinced that helicopter evacuation within the combat zone is the responsibility of the Army Medical Service. Supplemental evacuation by other aviation agencies should be provided as available and as required and requested by the Army Medical Service. One agency within the Army, must be responsible for evacuation within the combat zone if confusion and duplication of effort is to be avoided.

The company type organization for helicopter ambulance elements is superior to the small cellular detachments provided in T/O&E 8-500. Helicopter units, whether company or detachment size, should remain under the control of the field army or a centralized medical command should one be available. The inherent speed, range, and flexibility of ambulance helicopters dictate against their assignment to subordinate major commands.

Using the First Helicopter Ambulance Company as a prototype, a T/O&E for a helicopter ambulance company has been prepared, staffed, and submitted. This company, allocated to field army on a basis of one per corps, will consist of three forward evacuation platoons, each containing four reconnaissance helicopters of the H 13 type, plus minimum operating and supporting personnel. A fourth or support platoon, equipped with utility helicopters of the H 19 type, will provide selective evacuation between forward medical installations and supporting special treatment facilities. Administrative and maintenance functions will be consolidated in the company headquarters. The proposed organization will improve both the efficiency and effectiveness of forward air evacuation.

Control Long a basic principle of medical service control is particularly important in helicopter evacuation. Integration of the evacuation and treatment components of the field army's medical service is essential. Helicopter evacuation units should remain assigned to field army or an appropriate central medical command headquarters. In the "type" situation, the dispatch of individual helicopter evacuation sorties should be the responsibility and function of the corps surgeon, who is at a sufficiently high level to determine realistic priorities, yet close enough to the scene of action to keep abreast of the immediate situation. In unusual situations, helicopter evacuation elements may be decentralized to the control of subordinate surgeons as any other form of logistical support is decentralized. As soon as possible, however, control should be regained by the highest command level capable of accomplishing the evacuation mission.

Only Army Medical Service agencies should accept evacuation requests. Command surgeons alone know the status of medical treatment facilities, such as surgical lags, location of special treatment teams, and projected displacements of medical installations. Requests which exceed the capabilities of the medical service can then be referred to the appropriate supporting helicopter element for execution. This system, proved in Korea, ensures integration of evacuation and treatment elements and eliminates the confusion which accompanies division of responsibility.

Communications No separate communications net is required to control helicopter evacuation. It is feasible and desirable to process evacuation request through medical channels over "common user" facilities to the surgeon possessing dispatch control over supporting helicopter evacuation units. The present system is economical, and ensures integration of helicopter evacuation with tactical operations in forward areas. Air ground radio communications between medical helicopters and forward medical installations were never used in Korea. Reliance was placed on accurate reporting of pickup locations and visual air ground communications of panels and smoke. This procedure is sound. The large area over which helicopter units are capable of operating, and mechanical limitations in available radios, make it undesirable to depend on air ground electronic communications. Weight limitations dictate against providing several types of radio equipment in the evacuation helicopter. Airborne radio sets should be netted with appropriate Air Force agencies and fire support coordinating centers to provide control of aircraft in flight.

Personnel Helicopter pilots, particularly those flying reconnaissance type helicopters engaged in battle field pickups, should be officers of the Medical Service. On occasion, they will be required to administer first aid at the site of pickup prior to movement of the patient. In all cases, though they are incapable of administering treatment in flight, they must possess sufficient medical training and experience to make sudden decisions regarding the destination of patients. Medical Service pilots should receive greater consideration in the development of career patterns. Assignments are presently limited, and no progression is ensured.

Greater emphasis should be placed in integrating medical service pilots into the overall effort of the Army Medical Service. There has been a tendency to feel allegiance to the nonexistent "Corps of Army Aviation" rather than to the Army Medical Service. Pilots must be provided with an opportunity to

develop in the normal functions of their corps and to assume normal medical service responsibilities. Recently, several experienced pilots were given full responsibility for staff positions in hospitals and various medical command headquarters. The importance of this program cannot be overly emphasized and must be continued. If these principles of personnel management are ignored, the Army Medical Service will, in effect, lose some of its most capable junior officers.

Aircraft The most mislabeled evacuation vehicle in the Army Medical Service is the H 13 aircraft. There is a great discrepancy between the opinions of those at research and development level and those at the operating field level. Those responsible for the development of evacuation aircraft believe that all such aircraft should be capable of transporting patients internally. Observers in the field are convinced of the superiority of the present reconnaissance helicopter with patients transported externally on litter racks. Actually both are required. The larger aircraft of the H 19 and H 25 type will never replace the smaller H 13 for forward "battlefield" pickups. Their greater cost, larger silhouette, increased loading and unloading times, all dictate against their utilization in the division area. Tactical commanders responsible for their mission as well as for the lives of many men will be hesitant to clear the landing of a larger helicopter in their area when they would permit the landing of the small reconnaissance type.

It is uneconomical and unnecessary to provide the Army Medical Service with enough aircraft of the various types to accomplish the entire medical evacuation mission on a unilateral basis. Situations requiring mass evacuation (i.e., to empty a hospital for displacement or in connection with area damage control operations) can be met by requesting supplemental evacuation support from the Transportation Corps or other available aviation agency. The Medical Service has long depended upon the Transportation Corps to operate its ambulance trains and the Air Force to provide high performance, long range aircraft. This concept is also valid in helicopter evacuation operations.

Many observers in Korea have expressed the belief that there is no requirement at the present for incorporating fixed wing aircraft in Army Medical Service air evacuation units. The advantages of the greater speed, longer range, and lowered main-

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Th S geo G ral D p me f h A my duc g s d m
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er-all f rw d ur va ua ys m —Ed t

tenance problems inherent to fixed wing aircraft are offset by certain disadvantages. These include the maintenance problems incident to providing three instead of two aircraft for the Medical Service, the necessity for considerable additional training for Army Medical Service pilots (now qualified in rotary wing aircraft only), and the requirement for improved airstrips for medical evacuation.

In the forward combat area, of primary concern is the elapsed time from wounding to initial definitive surgery. While fixed wing aircraft are faster when airborne, the necessity for surface evacuation between airfields and medical facilities plus the duplication of handling patients detract from any apparent advantage of speed. For longer evacuation flights, not feasible for helicopters, fixed wing aircraft of the Air Force and other Army aviation agencies are available. The primary requirement for fixed wing aircraft within Army medical units at present is for the control of helicopter elements. The necessary command and liaison visits, the distribution of critical spare parts, and the aerial resupply of whole blood entail missions which would be favored by organic fixed wing aircraft. However, these requirements are currently satisfied by requesting supplemental aviation support.

The flexibility of medical evacuation can be improved by the provision of certain auxiliary equipment for both reconnaissance and utility type helicopter. Flotation gear is required if the Army Medical Service is to accomplish its accepted mission of evacuation anywhere within the army area, including adjacent off shore waters. The H 13 aircraft requires additional instruments to enable it safely to accomplish night missions and those flown under marginal weather conditions. It is not necessary that complete navigation instruments be provided because the accompanying loss in allowable cargo load and the requirement for a copilot will offset any advantages accruing therefrom. The Air Force with its specially equipped air rescue helicopters can execute such occasional missions as may exceed the capabilities of aircraft of the Army Medical Service.

SUMMARY

In a brief account of the evolution of medical helicopter evacuation in Korea, emphasis has been put on the principles developed and lessons learned. The progressive assumption by the Army Medical Service of its forward air evacuation mission has been outlined and the importance of supplemental helicopter evacuation support by nonmedical aviation agencies has been described. The superiority of the company type organization for medical helicopter evacuation elements is pointed out and a rec

equipment and ancillary personnel. Because they must work at top speed and with maximum efficiency under physically strenuous and mentally taxing conditions every effort must be made to shield them from disturbing influences. As with the athletic team the success of these efforts requires constant emphasis, prolonged training, unit loyalty, and high morale.

Although this principle applies to all military organizations it is believed to be more important in an evacuation hospital which is faced with special problems in the performance of its highly technical mission. In addition to giving medical care the staff of the hospital must be able and prepared to erect their own physical facilities either under canvas or by the rehabilitation of war-torn buildings. They must also be prepared to move the entire hospital on short notice with the least possible delay and to guard and defend the unit en route or on location. The means of accomplishing these objectives must be provided for so that the unit may function with a minimum of outside direction and assistance from other branches of the Army.

The complexity of the organization arises from the following factors. First, the Table of Organization and Equipment (T/O&E) provides a ratio of personnel to bed capacity of 0.8 person per bed as compared with 0.6 per bed in a relatively fixed numbered general hospital and 1.4 per bed in zone of interior hospitals. Hence fewer personnel are available to perform a more complex mission. Second, the situation is further complicated by the fact that there are 41 different types of technical specialists among the enlisted personnel and 26 among the officers. Many specialties may be the responsibility of a single person. Under these circumstances complete 24-hour coverage is a practical impossibility. Yet this type of service is often required for protracted periods. Thus it is imperative that a constant and intensive understudy program be maintained. Each person assigned to an evacuation hospital should be capable of performing the job of at least one and preferably two other specialists. Furthermore his morale must be such as to make him eager to work in another technical field whenever the need arises; otherwise the organization will break down under stress. Third, constant changes in personnel due to sickness, injury, expiration of term of service, rotation, compassionate leaves, and orders from higher authority coupled with the fact that qualified replacements are frequently not available or are delayed in reporting emphasize the need for training personnel to perform the 67 different types of technical jobs. In an evacuation hospital it is reasonable to expect a turnover of personnel of from 30 to 40 percent within a period of six to eight months after arrival in a combat zone.

Teamwork is important because of the uneven flow of admissions and dispositions. A sudden influx of large numbers of patients requiring emergency care must be handled efficiently and with confidence. Likewise a sizable number of patients to be evacuated must be processed expeditiously. Frequently, these operations must be carried out concurrently. In either case the importance of professional and administrative records cannot be overlooked. Both functions must be conducted without confusion or disorder. Split second timing and complete understanding, together with wholehearted co-operation and co-ordination, are primary requisites for these operations.

In order to be a fully productive member of the evacuation hospital team, each professional or technical specialist must be a well trained field soldier. He must also possess a thorough knowledge of several jobs other than his own and complete information concerning the general operation of the organization on a day-to-day basis. These requisites apply to male and female officers as well as to all enlisted personnel. There is no other type of organization in the Army medical service in which they are more important.

The development of teamwork requires time, education, training, and constant practice if the organization is to avoid a long "shakedown" period after it gets into actual operation. Teamwork cannot be attained unless all personnel and equipment of the unit are concentrated in one place, and the opportunity is provided for all members to work together at the job they are to perform, at least on a simulated operational basis. Newly assigned professional personnel must be afforded the means of establishing uniform policies consistent with those of the Army medical service. Officers must learn to know the weaknesses and peculiarities of their associates. Personalities must be given time in which to make adjustments. Each person must be taught to take care of himself under field conditions. He must also learn to perform highly technical procedures with improvised means and methods. Maintenance and conservation of supplies and equipment must be stressed. These important considerations cannot be imparted to personnel in a few days. Several months may be required. A definite training program with specific objectives must be followed through to completion and testing, in order to establish confidence and operational efficiency.

IMPORTANCE OF TRAINING PROGRAM

In my opinion the mobilization and training program (ATP 8-305) prescribed for evacuation hospitals by Army Field Force directives is sound and will produce the desired results. Experience with such a unit has produced convincing evidence that deviations

from this program result in serious handicaps costly errors and delays and low morale All of these are major causes for concern to the unit commander This is illustrated by the following account of the problems encountered by one such unit

The major portion of the enlisted personnel of an evacuation hospital were assembled at an Army post about 15 months prior to their deployment to the Far East Command in December 1950 During this period they were employed as an augmentation unit for the post hospital in which they became key personnel but they were unable to work together as a unit Under these circumstances they could not be released for unit training until four weeks prior to departure overseas Hence this training time all too brief had to be used to complete the individual requirements for overseas movement No time was available for instruction or experience in such basic matters as the pitching of hospital tents and the operation of a mess under field conditions Seven administrative officers also had been present for duty with the evacuation hospital but they were also placed on temporary duty with other organizations at the post Several of the original group were replaced a few weeks prior to the departure date In spite of their capabilities they were unable to conduct a satisfactory training program under these conditions A few Army Nurse Corps officers who were on duty at the post hospital had paper assignments to the evacuation hospital but no other associations with it Other than the evacuation hospital commander who reported for duty four months prior to departure time no permanently assigned medical officers were present for duty until 60 days prior to movement to the port Even then they were immediately placed on duty in the post hospital These factors again eliminated any opportunity to conduct anything resembling a unit training program The administrative staff officers after much hard work and without benefit of professional advice were able to devise a standard operating procedure and to orient a few key noncommissioned officers concerning its provisions All officers were required to study it however no opportunity was afforded for testing these plans and procedures under simulated operating conditions

Thus an aggregate of personnel was assembled and hastily moved to a port of embarkation with the Korean combat zone as its destination Due to crowded conditions on the transport only one hour per day could be devoted to training Fortunately the ship was diverted to Yokohama but unfortunately the professional officers and key enlisted specialists were again placed on duty in Army hospitals throughout Japan The administrative officers and about one half of the enlisted personnel were stationed with a newly arrived numbered general hospital from which

the latter group was finally able to borrow a minimum amount of training equipment in order to practice tent pitching and the techniques of establishing various parts of the hospital under canvas, one section at a time. In addition, about 100 enlisted men were newly assigned to the unit a few days before it departed for the combat zone. Therefore, up until the time of actually going into operation, none of the professional officers and less than half of the enlisted men, all of whom came from widely varied backgrounds, ever had a chance to work together as a team.

On arrival in Korea the staff of the hospital was allowed one week in which to draw its equipment and receive a brief orientation. At the end of this period they moved 227 miles and established a 400 bed hospital within four days. The lack of previous mutual experience resulted in a prolonged "shakedown" period. Fortunately, the tactical situation permitted the unit to remain in one location for several months where it functioned more as a station hospital than as a true mobile evacuation hospital. The question of whether or not it could have functioned as effectively as it should have under active tactical circumstances is, in my mind, still very much in doubt. Had the mobilization and training program for evacuation hospitals been followed as prescribed by Army Field Forces, the unit would undoubtedly have been in a more favorable position to carry out the mission for which it was designed.

After 18 months in the combat zone, the rotation system brought about a complete turnover in personnel. During this period the unit made only one move to a new location. An average patient load of 75 percent of capacity prevented practice moves. Didactic and on the job training was the only means of preparing new personnel for their jobs. Though short overlapping periods were provided for replacements and rotatees, this time was not adequate for their complete orientation to hospital operations under all conditions.

SUPPLIES AND EQUIPMENT

As a general principle, an evacuation hospital should be logistically self sufficient in direct proportion to the distance its personnel must travel in order to obtain various classes of materiel and to the difficulties which may be encountered in making the round trip to supply points. The current system of echeloned logistic support works satisfactorily under normal circumstances, but in my experience circumstances under field conditions are normal somewhat less than one half of the time. While the economy of supply demands that stocks on hand be kept to a minimum consistent with existing conditions, the application of hard and fast directives with respect to the maintenance of stock levels

quately trained under field conditions. The channel through which reports and papers must be processed before arriving in the hands of the editor of a professional journal is so lengthy that it discourages the author at the outset. However professional meetings and theater medical bulletins do much to overcome this last hurdle.

Much information and data concerning disease and injury in the combat zone should be accumulated and studied and evacuation hospitals furnish an ideal setting. Great benefits can be derived from such research activities. Hence it is a function of the hospital commander to stimulate and maintain a progressive research program.

SECURITY

For the purpose of this article the term "security" is defined as adequate protection and safety for personnel and government property as opposed to the general use of the term to mean the care of classified military information. Security of the entire hospital while in operation or in movement is a responsibility of the unit commander. The tables of organization and equipment provide the minimal means for its execution. The unit must improvise the plans and equipment for providing adequate locked storage space, fire prevention measures, interior guard and external walls or fences.

On occasion the unit commander may have to purchase additional locks. Heavy chicken wire if used in triple layers and interlaced with barbed wire serves to form a barrier within food and clothing storage tents. It is desirable to have section personnel quartered in these storage tents and to make sure that a responsible soldier is on duty in these tents at all times. Even under the best circumstances food and equipment may disappear. Frequent inventories and property checks are required together with the assistance of a well developed criminal investigation system. Only by such means can the commanding officer be reasonably sure of having supplies and equipment for operational use and protect himself from having to pay for sizeable property losses.

A few fire extinguishers are included in the unit assemblage. These are woefully inadequate especially during the winter months. The unit commander will do well to improvise water or sand barrels and buckets and to distribute them liberally throughout his area. Fire drills must be held. Extra fire guards must be posted and daily fire inspections must be religiously carried out. There is nothing more disconcerting to a commanding officer than to be awakened by a fire alarm and to see a ward tent disappear in smoke.

Occasionally the hospital may have an extra platoon of a separate collecting company attached to it. This unit may be used to provide an interior guard. Such an arrangement is fine if the men are well trained and their officers are capable leaders. But a poor guard can do much more harm than good. It is better perhaps to form the interior guard from regularly assigned personnel.

Fences or walls become an important security factor while the unit is in operation. Again, these are not provided for in the unit assemblage. Wire of all types is at a premium in the combat zone. Hence, a detailed justification for new wire is required. In case it cannot be obtained, then it becomes necessary to recover wire that has been used for other purposes. This can be a dangerous procedure in areas where mines and booby traps have been laid by the enemy or our own forces. It is an extremely good rule to leave all wire alone unless one knows by whom and for what purpose it was last used. Once the wire has been obtained it is well for the unit commander or one of his staff to know how to make the maximum use of it. This can be accomplished by constructing single or double aprons in addition to multiple strands on poles. Concertina wire can be very helpful in fast moving situations. But walls and fences are not to be relied on alone. Guards must be instructed to keep unauthorized persons away from the fence. Patients can easily tear it down or pass property through it. Prowlers can quickly cut it if allowed to get close enough. In a fairly stabilized situation in which friendly forces have air superiority it is well to improvise floodlights and to employ them along the fence line. Fences should be more substantial around areas where nurses live and work, particularly when they are the only caucasian women in the combat zone.

Security from guerilla attack is generally provided by surrounding units, but the hospital personnel must be trained and organized for defense. On one occasion my unit was left in an isolated area with only one Military Police platoon within a 25 mile radius. In such instances, it is well to have a few automatic weapons and to let the indigenous population know that hospital personnel can use them effectively. In the above case the Military Police lieutenant was kind enough to park his armored car in our compound overnight. A show of strength may be extremely valuable, though it is hard to imagine an actual attack, with professional officers and nurses coming under fire and the consequent confusion. It may be worth while to consider the possibility of using ambulatory patients as reinforcements in case of a real attack.

Finally, the proximity of friendly installations which may invite enemy attack must be considered by the unit commander. The unit may move into a relatively safe area, only to have a gasoline

Laboratory Findings On 18 February 1953 the erythrocyte count was 5 810 000 per cu mm hemoglobin 15.5 grams per 100 ml leukocyte count, 18 000 per cu mm with 90 percent neutrophils 8 percent lymphocytes and 2 percent monocytes. The urine was acid amber in color in quantity insufficient for specific gravity determination albumin one plus sugar one plus acetone two plus there were four to six white blood cells and one to two red blood cells per high power field and two to four hyaline casts per low power field with on occasional coarse granular cast.

On 19 February the hemoglobin was 14 grams per 100 ml, leukocyte count 19 000 per cu. mm with 93 percent neutrophils and eight percent lymphocytes. Blood urea nitrogen was 10 mg per 100 ml sugar 182 mg per 100 ml CO_2 combining power 64.5 volumes percent serum amylase 85 units (normal laboratory values 15 to 20 units) Cephalin cholesterol flocculation (24 hours) was two plus (48 hours) three plus thymol turbidity one unit, serum bilirubin was not elevated. Total protein was 7.62 (albumin 4.84 globulin 2.78) grams per 100 ml.

On 20 February a spinal tap revealed normal pressure fluid was bloody at first but clear later there were two lymphocytes per cu mm sugar was 87 mg per 100 ml bacterial culture was negative after 96 hours.

Roentgenograms of the chest on 18 and 19 February did not show definite pneumonia but there were prominent markings in the right lower lung field. A roentgenogram of the abdomen on 18 February showed no free air under the diaphragm. The delineation of soft tissue was good the liver was enlarged and there was no evidence of intestinal obstruction. On 19 February a roentgenogram of the abdomen showed more gas in the small bowel and a moderate amount in the colon. No other abnormality was demonstrated however the delineation of soft tissue was not as good on the left side of the abdomen as on the previous study.

Course in Hospital At 1930 hours on 18 February the patient was taken to the ward and a Levin tube was passed. During the intubation the patient had a grand mal type seizure with tongue biting ending in muscle flaccidity. Examination of the abdomen at this time showed minimal increase in muscle tone with good peristaltic sound. The liver was palpable three fingerbreadths below the costal margin. There was minimal response to deep palpation. Rectal examination showed some tenderness high otherwise findings were not abnormal. The patient received 100 mg of meperidine hydrochloride (demerol) and an intravenous infusion of 1 000 cc of a five percent solution of dextrose in distilled water. The following morning the patient continued to complain of upper abdominal pain radiating to the back with

associated coughing and anorexia. The temperature dropped from 101° to 99° F, the pulse increased to 120 and the blood pressure to 155/110 mm Hg. Physical examination at this time showed three plus inflammation of the throat, depressed breath sounds and dullness in the bases of the lungs. The heart rate was rapid with no murmurs and no irregularities. The abdomen showed spasm with muscle guarding and tenderness in the upper abdomen. There was marked right upper quadrant tenderness on compression of the right chest. Peristalsis was decreased. Medication at this time included meperidine hydrochloride 2 000 cc of a five percent solution of dextrose in distilled water one ounce of aluminum hydroxide gel (amprojel) every two hours 8 cc of donnatal three times a day, 180 mg (300,000 units) of penicillin and 0.5 gram of streptomycin every six hours.

In the afternoon of 19 February the patient was examined at the neuropsychiatric service. It was believed that this was a case of alcoholism with convulsions due to withdrawal. A concomitant abdominal process requiring surgery could not be ruled out, but the clinical picture was more suggestive of acute gastroenteritis. The consultants favored treating with a "Bellevue Cocktail." He was then given an intravenous infusion of 1,000 cc of a 10 percent solution of dextrose in distilled water with 30 units of regular insulin and 1 cc of thiamine. At 2000 hours the same day, because the flat film of the abdomen showed a dilated large bowel a Miller Abbott tube was passed. Peristalsis was again active. The patient felt subjectively improved and the abdomen was described as no worse. That evening he became restless and confused. He saw imaginary people and talked with them. Because he was very disoriented the next day, he was transferred to the neuropsychiatric service. Diagnosis of delirium tremens was made and he was given three doses of 1.2 grams of chloral hydrate by mouth over a nine hour period. He was still difficult to manage and it was necessary to place him in restraints.

That afternoon the patient was still restless but appeared to be improved. He talked coherently, but had definite tremors of the hands and lips. His temperature rose to 101.4° F. Physical examination of the abdomen showed it to be firm and slightly distended with moderate guarding in the upper abdomen. No deep tenderness or rebound tenderness was noted. The bowel sounds were described as normal. Because of the tremors and restlessness barbiturates were used although with reluctance because of apparent liver damage. At 1600 hours on 20 February the patient's pulse was 168. He developed episodes of Cheyne-Stokes respiration and became opisthotonic. It was believed that he was now more of a medical than a neuropsychiatric problem and he was transferred to the medical ward.

On arrival physical examination was very difficult because the patient was wildly delirious. There was definite scleral icterus. The lungs were clear anteriorly. The heart was border line in size with a regular tachycardia. A systolic murmur was heard at the apex and left sternal border. There was no friction rub. When a spinal tap was performed the pressure was normal. The first fluid was bloody but later cleared. At 1900 hours the patient was described as being in extremis. His temperature was 106° F and the heart rate 170 with distant tones. Breath sounds were decreased in the left anterior chest. No rales were heard. At 2030 hours he had a prolonged grand mal seizure vomiting a small amount of dark brown material. He subsequently became very cyanotic and breathing ceased. Artificial respiration was attempted but was unsuccessful and he was pronounced dead at 2045 hours.

DISCUSSION

Dr. R. d. Before proceeding with the discussion I would like Doctor Claypool to kindly show the films.

Dr. Claypool: The first series of films is a set of chest roentgenograms. The first one was made in January 1952 and the others on 18 and 19 February 1953 at the time of his admission. None of them show anything particularly striking but it is noted that the right side of the diaphragm seems a bit higher on the film taken in February 1953 than on the one made a year previously. However I do not believe that any great significance can be attached to this. There is no evidence of any pneumonitis immediately above the diaphragm to indicate subdiaphragmatic disease and no free air can be seen beneath the diaphragm on these films. The next series of films are the flat plates of the abdomen. None of these were made in the upright position. You can see that there were no fluid levels in the stomach and no air bubble on any of the films. The first two were made on the date of admission the second two on the following day. You can see by looking at the set of films that there was increasing gas in the bowel. The area of gas extends to the region of the splenic flexure. We see again no evidence of the outside boundary of the bowel indicating again that we have no definite evidence of free air in the peritoneal cavity. The exact significance of distension of the colon over to the splenic flexure is a matter of conjecture in this case. In an adynamic ileus that is progressing there will be a progress of the gas up to a point and if films are made later on one will see the air progressing beyond that point. However again in a mechanical ileus such as would be found in an obstruction you will have findings of gas up to a point again. Therefore we have no diagnostic features on this film. These findings would be compatible with an adynamic ileus due to any of the causes of peritoneal irritation or pain in the abdomen. They could

also indicate a mechanical obstruction such as volvulus on the left side of the colon or an intussusception through the transverse colon to the splenic flexure. I see no evidence of gallstones or of pancreatic calculi. Do you have any questions on the films?

Doctor Hoffman: I would like to ask one or two questions. Doctor Claypool: As far as you can tell, the psoas shadows are fairly well outlined. From that, would you say that fluid in the peritoneal cavity would be minimal?

Doctor Claypool: That's right. The presence of the psoas shadows and also the fact that there are well defined properitoneal fat lines which are usually obliterated if there is any great amount of fluid present would rule out ascites.

Doctor Hoffman: Do you think there is more than one point of obstruction there? Do you think that this obstruction is distal to the splenic flexure?

Doctor Claypool: No, my point is simply that the gas goes up to the splenic flexure of the colon. Beyond that we cannot be sure.

Doctor Hoffman: And just one other question about the diaphragm: can you give me any more information about that? As far as you are concerned, the position is not abnormal?

Doctor Claypool: It is within the limits of normal. There is no haziness of the diaphragm such as would occur if there was an abscess or infectious disease.

Doctor Hoffman: How positive are these films in this particular position in detecting air or gas under the diaphragm?

Doctor Claypool: These particular films are made in the flat position so they are of no value whatsoever. The chest films will show an appreciable amount of gas under the diaphragm; however, a small amount might not be detected immediately beneath the diaphragm on chest technic.

Doctor Hoffman: Do you think that the technic is adequate here to rule out gas under the diaphragm?

Doctor Claypool: I would certainly favor the fact that we have enough evidence here to assume there is no free air in the peritoneal cavity.

Doctor Hoffman: Was there anything about the renal shadows?

Doctor Claypool: Nothing that would be of diagnostic help here. We mentioned previously in our discussion that there was some lobulation of the right renal shadows, but I believe that that was just fetal lobulation.

D r H f f m Thank you Doctor Claypool In proceeding to discuss this case I think that we must confine our discussion to those conditions which might produce this catastrophic series of events I would like to dismiss merely in passing some of the few common causes of abdominal pain which arise from lesions above the diaphragm namely myocardial infarct and acute pericarditis I am sure that many of u are not aware all of the time that acute pericarditis can simulate an acute abdomen very frequently with abdominal pain spasm and shock Lower lobe pneumonia and dissecting aortic aneurysm must be mentioned However I believe there is no evidence in the history or subsequent finding to substantiate any of these possibilities Like wise we may on the basis of the available information rule out malignant lesions especially lymphoma in which invasion of vital organ may result in rupture perforation or obstruction I do not believe we need to consider seriously a granulomatous involvement of the abdominal organs Amebic abscess and primary liver disease hepatoma with rupture and hemoperitonum do not warrant serious consideration

The initial elevation of the diaphragm worried me a little bit but I do not think that that is significant at least from what Doctor Claypool has said We might consider some other entities One I would like to talk about is acute porphyria We all know it is an uncommon entity and frequently is manifested by the triad of abdominal pain which is usually colicky and in the lower abdomen, neurologic manifestations and a port wine urine Death in these cases is usually due to an ascending paralysis with respiratory failure I do not believe we are seriously concerned with this disease in this particular instance nor do I think we must consider any other metabolic diseases with abdominal manifestations I thought seriously about volvulus of the sigmoid in view of the x ray findings However with volvulus of the sigmoid frequently we have a history of constipation of long duration Usually there are mild attacks of abdominal pain until the acute obstruction occurs The majority of patients with volvulus usually are in the age group between 40 and 70 years and the pain of an acute attack usually is continuous with colicky exacerbations characteristic also is the extreme abdominal distension which one can usually determine if the abdominal wall is lax Under these conditions also it may be possible to outline the sigmoid loop The characteristic x ray findings to my knowledge are tremendous dilatation of the sigmoid loop with fluid levels and often two points of obstruction at the sites where the bowel may be twisted

Mesenteric vascular occlusion is usually a dramatic event and frequently presents a baffling problem It is more common after the fifth decade and its sequelae are severe peritoneal irritation and small bowel obstruction The problem is usually not accurately solved before laparotomy or necropsy Sometime it follows abdominal pelvic operations The arterial circulation is occluded in about 60 percent of the patients and in 90 percent of these some branch of the superior mesen-

teric vessel is usually involved Embolism endarteritis or a dislodged atheromatous plaque may usually account for the occlusion Venous mesenteric occlusion usually follows thrombosis or phlebitis Pain is usually constant or paroxysmal and is generalized with vomiting eventually becoming fecal Bloody diarrhea frequently occurs particularly when necrosis develops I do not think we need seriously consider this at this time

I would like to pass on however to several other conditions which are less esoteric but I think are common enough that we have to give serious consideration to them First is acute appendicitis with perforation I guess we have all been taught that this should always be considered in the differential diagnosis of any acute abdomen I believe that in this particular instance the history with the clinical findings are a little bit atypical for a ruptured appendix however there is no such thing as a typical picture Be that as it may I prefer at this time that we consider other things One entity is acute cholecystitis with perforation and bile peritonitis I think there are three features which most of us keep in mind when making this diagnosis One is the typical pain that is constant and severe in the epigastric region with reference to the right posterior chest The pain is severe early and later it becomes constant and dull The second feature is a tenderness and spasm beneath the right costal margin and thirdly a palpable mass in the right upper quadrant I think that without this triad the diagnosis clinically cannot be made with certainty

We now come down to the two controversial possibilities as far as I am concerned in this patient One is acute hemorrhagic pancreatitis I am sure that was considered quite strongly by the doctors who saw this patient during his hospitalization and I am certain that we are all familiar with the severe pain usually epigastric or in the right upper quadrant It is usually persistent but it may be paroxysmal or colicky with radiation to the back Nausea and vomiting are quite common Temperature elevation is usually slight unless suppuration or gangrene is associated Most textbooks state that the abdominal rigidity which one sees with other lesions is not as striking in acute pancreatitis as it is with other acute abdominal conditions Peristalsis is usually inaudible and jaundice is quite a common feature in acute pancreatitis Although the history and the appearance of the patient suggested jaundice the serum bilirubin was reported as not being increased and I think that is one laboratory finding that we can put a good deal of reliance on in deciding whether or not a patient is icteric Not infrequently signs of hypocalcemic tetany have been observed during the course of acute pancreatitis I do not believe that the episode of the grand mal seizure which was mentioned in the protocol was confused with that of hypocalcemic tetany Of course the elevated serum amylase is probably the most constant feature which I think most of us rely on in making a diagnosis of acute pancreatitis We are all aware that moderate elevation of the serum amylase can occur

in many conditions other than acute pancreatitis I believe that although the serum amylase according to the figures that we have available was slightly elevated in this particular patient it was in the indeterminate zone I think that I would like to dismiss the diagnosis of acute pancreatitis although I still have some hesitancy in doing so

I would like however to discuss perforated peptic ulcer I am sure we are all familiar with this dramatic abdominal emergency in which a comparatively healthy person is transformed in a matter of minutes to a critically ill patient. The early picture of severe chemical peritonitis due to rapid dissemination of acid gastric contents with hypotension tachycardia and pale ashen faces and a boardlike abdomen are all too familiar to us. This picture subsides rather rapidly and is probably due to the dilution of the chemicals with transudate. The patient spontaneously comes out of the shock with associated subsidence of his physical findings. Subsequently if the disease is allowed to continue or progress over 12 hours peritonitis becomes generalized with vomiting fever leukocytosis ileus and distension. We are all aware of the fact that perforation is very common in alcoholics and is probably the result of stimulation of the gastric juice with failure to buffer this with the normal intake of food. There is certainly a lot of difficulty in obtaining a previous history of ulcer in alcoholics and not infrequently we are unable to obtain any previous history when a patient is first seen, however following recovery in a large percentage of cases a typical history of many years duration not infrequently obtained.

For the diagnosis of perforation, I would like to bear in mind the diaphragm but because we know that in about 60 percent of the patients it is not seen, and because the technique in this particular examination was not as good as we would have liked to have seen it I do not know that we can really put too much importance on this negative finding. The terminal event in this patient I think is that of aspiration with asphyxia due to respiratory tract obstruction.

The enlarged liver probably demands an explanation I do not think we have any really good evidence either clinically or from the laboratory point of view of severe liver disease. The only finding was that of an elevated cephalin-cholesterol flocculation. I believe that the hepatomegaly perhaps may be explainable on the basis of fatty infiltration, possibly on an alcoholic basis. We could certainly go on and discuss many of the other possibilities but I think I will say that my impression at this time is that the patient probably had a perforated peptic ulcer with generalized peritonitis. I am not willing to say whether or not he had any localized collection of pus under the diaphragm or in the pelvic cavity. Also he may very well have had fatty infiltration of the liver due to alcoholic intake and an aspiration pneumonia.

Doctor Tobin How do you explain the stiff neck?

Doctor Hoffman Well I do not think it is due to any irritation of the meninges from infection I think that with severe peritoneal irritation we may rather frequently see spasm of the paraspinal muscles with perhaps a meningismus but I certainly have no reason to suspect any central nervous system lesions either bacterial or malignant, to explain it I cannot explain this man's convulsive episodes perhaps the neuropsychiatric service can help on that.

Doctor Reed Do you think that a patient with perforated peptic ulcer would have sought hospitalization more quickly than 36 hours after onset? And also would he not have more severe cramping pain with boardlike rigidity?

Doctor Hoffman I believe that depends on the person's personality make-up It depends first of all on the level of pain which these persons can endure Secondly an alcoholic may have his mental processes sufficiently hindered so that he may not be aware of pain as ordinary persons would I agree with you that in the majority of persons one of the most severe types of pain that occurs is from the perforated peptic ulcer

Doctor Reed One other question You have ruled out lesions of the heart I would like to ask you how common it is in an external examination with the stethoscope not to find any physical change in the heart when there is a true coronary occlusion with diaphragmatic irritation and periumbilical pain?

Doctor Hoffman Well without an electrocardiogram it is impossible to make a definite diagnosis of a myocardial infarct from physical examination The only thing that may help you is the appearance of a friction rub which frequently does not appear until a day or two after the onset of the disease In pericarditis you may see it early There were no electrocardiograms taken in this case The man's blood pressure was presumably not low so that I think that it would be a very tenuous diagnosis

Doctor Reed Thank you very much Doctor Hoffman I think you have covered the differential diagnosis with the most likely diagnoses mentioned I would like to have Doctor Chambers* discuss the neuropsychiatric aspects of this case at this time

Doctor Chambers The primary picture presented by this patient with reference to his neuropsychiatric status seems to me primarily that of a psychosis superimposed upon the physical difficulties which were of primary interest when he came in It is easy to be conclusive as to what the psychic process was it was delirium It is a little bit more difficult to say what are the factors involved in the delirium itself It was called delirium tremens when he was transferred to the neuro

Capt William A. Chambers USAF (MC) Chief Closed Ward Section, Neuropsychiatric Service

psychiatric service the background data for this is quite positive and the time sequence is quite correct however the broader scope of delirium in general has to be considered first

The classic features which we would see in a delirium from any cause are first a state of clouded consciousness with defects of grasp and orientation of a fluctuating quality and second a state of distortion of reality which has been referred to by some authors as illusional delusional and hallucinatory. In this case the delirium is not clearly any one of these things yet it borrows somewhat from all of them. In considering delirium in the broad sense we must search for a combination of these two factors. A third factor in the clinical triad of delirium is an affective disturbance usually that of fear and it is to be noted that it is congruent to the mental content of the psychotic thought process of the moment. So much for delirium in general

The specific basis the causative agent of this patient's delirium is a little but less easily arrived at. With respect to the psychiatric consultation which occurred on the second day there is a clear history of alcoholism referred to. I do not know whether that had been presumably available the entire time. There is no reason to doubt that this man had been a severe alcoholic. The effects of alcoholism on him and its contribution to the delirium are less clear. Presumably he had quit drinking at the time of the onset of symptoms—it is not stated but I definitely think it would follow—so that the period between that time and the onset of the psychotic state would be around 72 hours. In this interval we would expect to see withdrawal after steady drinking lead to psychosis in a susceptible person. Considering now the alcoholic causes particularly of the delirium prodrome fits well with this picture also. The grand mal convulsion during a painful or unpleasant stimulus was consistent with this picture. It preceded the onset of psychosis by some 24 hours. The course of the psychosis is not necessarily pathognomonic but was consistent with delirium tremens. We note that the onset was late in the second day of hospitalization the patient continued to be psychotic until some time not specifically stated and by afternoon was referred to as speaking coherently. At this time he was again transferred to the medical service and while there had another psychotic episode. This fluctuating state of the psychotic process is quite consistent with delirium tremens however against it if you will the garden variety of delirium tremens is the mode of onset to this patient. The complaint of pain is by no means a frequent feature in delirium tremens and is suggestive. I think that the delirium itself is on another basis or is a superimposition. I am much more inclined to think that the delirium is due to multiple causes rather than due to alcoholic withdrawal. In the particular sensitivity found in alcoholic withdrawal pain itself is a stimulus to a delirious state. The evidences the vital signs and the hematologic findings raise the question of whether or not any infection existed at least the patient was under considerable stress from pain

and the physical process being experienced at the time I think that it would have been an error to have said this is simple delirium tremens and nothing else. The psychiatric picture is that of the superimposition of an intercurrent delirium on a grave physical ailment. We cannot be sure as to whether this was delirium tremens or delirium from a combination of factors. I would tend to favor the latter myself with alcohol probably having set the stage. In such an event and without physical illnesses this man might have had episodes of delirium tremens but would not have a prejudiced course as to physical illness. Any questions about the psychiatric status?

Docto Gotto Do you think this man had grand mal epilepsy and may have been having attacks?

Doctor Chambers I would not be particularly prone to think so. The convulsion itself is not infrequent in withdrawal as a prodrome to delirium tremens itself and I think with this particular history that that is the thing you have to think of first, rather than any idiopathic epilepsy. I would not question that he did have grand mal convulsions at the times cited.

Docto Gotto It also appears that he had some generalized toxic condition.

Docto Chombe : Yes he certainly could because that is the point I mentioned particularly—that this delirium has to be of somewhat unspecified causes. That it is a delirium is clear but its course is less clear at this time. In either event though I would like to say this about delirium that this is usually just an incidental finding superimposed on other pictures. Certainly it is not the major picture in this case it is a complicating factor.

Doctor Reed Doctor Chambers could you exclude an abdominal crisis of syphilis with the history as stated?

Doctor Chmbe One would have to think of it but that there are physical signs to accompany the pain I think allows us rather quickly to exclude that. The presence of fever the suggestion of hemoconcentration in the initial laboratory work plus the frank elevation of white blood cells—all could have been due to hemoconcentration. Fever and the steady quality of the pain are also somewhat against it. Elevated blood pressure is against it as well. It is infrequent that you find these physical findings with the gastric crisis alone.

Doctor Reed Thank you very much Doctor Chambers I would like to ask Doctor Aiken to review the surgical aspects of this case for us.

Docto Aiken I would like to say that I agree with Doctor Hoffman in dismissing pancreatitis although with a few slight reservations as a cause of this man's death and also I agree with him in dismissing

C I Luc o E G tto USAF (MC) Dire to Pt f sst nal Serv ces

M J David W Aiken USAF (MC) Chf G mal Surg cal S ction Surg al Service

other intra abdominal conditions that he mentioned and dismissed. This patient died of a fulminating infection. I believe there is considerable evidence in the physical examination and description of the hospital course to show that he did not have a significant degree of peritonitis. On a number of occasions apparently rather deep palpation into the abdomen was possible sufficiently to outline the border of the liver. I think that the rectal examination showing some tenderness high may not be significant as regards peritonitis because apparently the patient reacted to what is a severe stimulus in that type of examination. Just as Doctor Hoffman is willing to accept the negative x ray evidence for the diagnosis of perforated peptic ulcer so I am willing to eliminate that possibility.

Speaking of fulminating infection and the enlarged liver I suppose we should mention although in a negative fashion acute septic pylephlebitis of the liver which is nearly always secondary to some infection in some organ of the abdomen. I believe that this patient falls fairly clearly although with some reservation which I will mention into that group of patients who die from perforation of the lower esophagus. There is a diagnostic category called spontaneous perforation of the esophagus so called because no pathologic condition is found at the site of perforation. I think that probably this patient falls into that category. The majority of such patients are alcoholics they come in with histories of severe epigastric pain going through to the back and there is usually a history of vomiting. However there does not have to be history of vomiting and spontaneous rupture of the esophagus have occurred following retching at stool lifting of a heavy weight labor and delivery and particularly after a grand mal epileptic seizure.

The statement in the history however that he had associated nausea and gagging indicate to me that undoubtedly intra esophageal pressure was increased enough to cause a rupture. The usual course of this condition is that a severe fulminating always fatal mediastinitis develops. Now this would explain the pain and stiffness in the neck and possibly even the redness in the throat if it got that high. One of the reservations that I have to make in this diagnosis is the fact that we do not have any concrete evidence of its rupturing into a pleural cavity which normally always but not absolutely always happens. There certainly was plenty of dullness and decreased breath sounds mentioned which could go along with fluid in a pleural cavity. You would expect that rales or gurgles would have been heard but I am willing to overlook this in going on a limb for diagnosis.

In regard to the use of the Miller Abbott tube for a dilated large bowel I would like to mention that apparently the physicians who used the tube were doing so as a last resort. They probably really did not believe that the tube would effectively decompress the dilated large bowel. The only way to decompress an obstructed large bowel is by

cecostomy or transverse colostomy and certainly they did not believe they had a strong enough case to warrant those measures so it was just thrown in because nothing else was being effective I note there was right upper quadrant tenderness upon compression of the right side of the chest Frequently patients with this condition have an abdomen which is actually boardlike which he apparently did not have or if he did it relaxed from time to time particularly after a grand mal type of seizure In regard to this condition there are probably many more than a dozen cases that have now been reported in the literature as having been diagnosed antemortem and operated on with recovery and perhaps 200 or 300 fatal cases reported

The operative treatment is to open the chest the left chest probably close the perforation drain the mediastinum into the pleural cavity and then drain the pleural cavity I do not think anybody is doing mediastinotomies to relieve this area of infection from this condition I suppose there are other lower esophageal lesions I should mention as possible causes of perforation Ulcerations do occur in hiatus hernia Pulsion diverticula do not commonly perforate they simply enlarge and cause symptoms of obstruction Are there any questions?

Docto T bin Why did you rule out acute pancreatitis so quickly?

Do tor A ke Because I am willing to accept the serum amylase level of 85 as being just slightly over the normal limit and I like to have a really good amylase level to make that diagnosis

Do tor Tobin In acute pancreatitis the serum amylase may be elevated early and fall rapidly

Docto Aik It may come down rather rapidly that is true It is a difficult diagnosis to make without the elevated amylase and I simply think that there is enough evidence to point toward my diagnosis, so that I am willing to explain it all on that basis Of course alcoholism and pancreatitis very commonly go together Maybe he had that too

Docto Reed Doctor Aiken do you find x ray evidence of perforation of the esophagus such as widened mediastinum?

Doctor Aiken Not necessarily

Doctor Reed Splinting of the diaphragm?

Docto Aiken Well I don't know

Docto Cloypool Yes you usually find a widened mediastinum although I am sure there are cases of rupture of the esophagus in which you will not find evidence of mediastinitis Another common x ray finding in this condition is mediastinal emphysema There is no evidence of these findings in this case

Doctor Aike The most recent good article on this is one by Mackler¹ I may be a little bit prejudiced on the diagnosis because one other

article I refer to was in the Hartford Hospital Bulletin seven years ago by Aiken and Lampson.

Do t Re d Thank you very much, Doctor Aiken for that interesting discussion on perforation of the lower esophagus Doctor Gatto would you care to comment on this case?

Docto G tto During this patient's rapid downhill course he had increasingly severe symptoms which involved not only his abdomen and his central nervous system but also his vascular system. I am impressed by the generalized toxicity that the patient demonstrated. His pulse climbed to 168 his heart sounds were distant and he appeared to be in severe shock. He showed definite signs of meningeal irritation or cerebral involvement. Because the history gave no complete neurologic examination one cannot be sure what neurologic findings there might have been. One can however perform a neurologic examination on unconscious patients or even disturbed patients with some degree of accuracy and understanding. This should be done repeatedly in such cases as this one.

The development of a psychosis during the course of severe organic disease often creates a dilemma. The question frequently arises: Where is the patient best treated? In general it would be true that if the neuropsychiatric facility has excellent medical facilities itself together with personnel who understand the nursing care of physically sick as well as psychiatrically disturbed patients then it is possible for a patient to be treated on a psychiatric service however when such care is not available and a patient develops a psychosis during the course of an illness which requires specific and constant medical care it may be best to keep him on the service in charge of his case and seek psychiatric assistance to follow his mental status and to provide psychiatric therapy that may be needed. I say this advisedly because of what I have known in the past to have happened to certain persons who developed psychoses and were too quickly transferred to psychiatric services without true evaluation of their underlying organic condition. The discovery of individual brain tumors on a psychiatric service is not uncommon. I remember further the case of a patient who had severe bilateral pneumoconiosis underlying a psychosis and who would have done much better if he had been on a medical ward receiving oxygen than on a psychiatric service being treated as a schizophrenic. The decision as to the proper location for the treatment of this patient was obviously of importance in his treatment. The fact that he had an alcoholic background perhaps confused the issue leading to his too early transfer to the psychiatric service with the diagnosis of simple alcoholic withdrawal however the degree of severe generalized abdominal distress and the severe delirium appear to have been far in excess of what we commonly see in alcoholic withdrawal and delirium tremens. Doctor Chamber's discussion aptly indicates that this delirium was definitely of a toxic or infectious nature which perhaps was only

influenced by the earlier physiologic dependence on alcohol I must point out that in this patient the use of barbiturates for sedation was not advisable. Perhaps paraldehyde would have been more useful for sedation and also for preventing further confusion of his clinical picture. I would like to raise one point in view of what appears to be a generalized toxic picture. Is there any other generalized organic condition that should be considered in this patient? Sometimes following alcoholic debauches or debilitation overwhelming infectious or toxic reactions may occur which seem to present generalized clinical pictures very much like the Waterhouse-Friderichsen syndrome in which many systems are involved and physiologic mechanisms are greatly impaired. I wonder if we may hear a few words on this.

Doctor Hoffman: I am not familiar with the Waterhouse-Friderichsen in association with acute alcoholism. The usual causes are septicemia due to *Neisseria intracellularis* and occasionally to *Hemophilus influenzae* in which one sees widespread destruction of the adrenal cortex. Usually the clinical manifestations are shock and severe purpura. I do not think this patient fits into that category at all.

Doctor Baird: I would like to ask you if you had considered the diagnosis of carbon tetrachloride poisoning?

Doctor Hoffman: Usually with carbon tetrachloride poisoning you expect a lot more in the way of findings. Early there is oliguria with azotemia and in fatal cases uremia and/or evidences of toxic hepatitis. You expect elevation of the blood urea nitrogen and you might see severe hematuria. Of course carbon tetrachloride can pick out either the liver or the kidney or both and just on the basis of what we have here I do not think that we can say clinically that this man had carbon tetrachloride poisoning.

Doctor Gaenler: Concerning Doctor Aiken's remarks I would not consider the diagnosis of perforated esophagus. In the patients I have had an opportunity to see there was a very definite sudden onset. They coughed, retched, vomited or had a bowel movement and felt a sudden sharp pain in the chest; there was no question about the onset. The pain was in the anterior and posterior chest or was pleuritic and was not primarily an abdominal pain. There were no abdominal findings in these patients. I have heard of cases where there were no perforations into the pleural cavity although those patients I have seen did have perforation into the left pleural cavity and had a large pneumothorax. In some the chest was filled with fluid and esophageal contents. I can concede it possible that the pleuras are not perforated but any patient who does not have a pneumothorax and does not have air in the mediastinum does not have perforation of the esophagus. The mediastinum in this region is very soft and the pressure relationship between esophagus and mediastinum would attract air into the

mediastinum. Chest roentgenograms of this patient on 18 and 19 February were negative and there never were any findings primarily referable to the chest. Of the many diagnoses that could be considered I would think of perforation of the esophagus last.

Dr Hoffman's diagnoses

- 1 Perforated peptic ulcer
- 2 Fatty infiltration of liver
- 3 Aspiration pneumonitis

Dr Aiken's diagnosis

- 1 Perforation of lower esophagus

PATHOLOGIC FINDINGS

Dr Reid: This patient had an acute hemorrhagic necrotizing pancreatitis with extensive involvement of the abdominal fat and mesentery. The pancreas was enveloped in a capsule of blood and large areas of necrosis stretched from the midportion of the pancreas down along the left abdominal gutter and followed the descending colon to the pelvis indicating extensive lipase activity and intra abdominal chemical toxicity. Other gross findings were moderate bilateral hydrothorax, aspiration of vomitus and myocardial dilatation. The liver was definitely enlarged weighing 2750 grams and was quite pale yellow and smooth. There was no evidence of cholelithiasis and there were no calculi in the pancreatic ducts. Microscopic sections of the pancreas showed necrosis of blood vessel walls and pancreatic tissue. The sections of the liver showed marked fatty changes involving all sections of the lobule. The lungs showed an area of pneumonitis.

In retrospect I might say that the clinical evidence for acute hemorrhagic pancreatitis can be found in the history but when a physician is confronted with the type of clinical picture here it can be very difficult to decide on one definite diagnosis.

Pathologic diagnoses

- 1 Acute hemorrhagic pancreatitis
- 2 Fatty degeneration of liver
- 3 Pneumonitis

Dr Tibbels: When this patient entered the hospital everyone thought he obviously had an acute abdomen but the diagnosis became less obvious as time went on particularly after the convulsion. The combination of convulsion, stiff neck and delirium suggested the possibility of meningitis.

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Atypical Lower Nephron Nephrosis

BERT G. LEIGH *Captain, MC, USA*

JAMES S. BERGER *Major, MC, USA*

JAMES E. GRAHAM *Colonel, MC, USA*

MANY AUTHORS¹⁻⁴ have stressed as cardinal signs of the acute phase of lower nephron nephrosis antecedent shock followed by oliguria, hypertension, proteinuria, and excretion of granular or pigment casts in the urine. Likewise, they correlate clinically the rapid elevation of nonprotein nitrogen and serum potassium in the patient displaying full-blown symptoms of uremia. If the patient survives the anuric phase of the disease he progresses to the diuretic or recovery phase during which large amounts of urine and electrolytes will be excreted. The serum potassium and sodium levels drop followed by a gradual fall in nonprotein nitrogen and, if proper safeguards are not taken, a salt depletion syndrome may develop.⁵

The following is an atypical case of lower nephron nephrosis in that the acute phase of the disease was never clinically evident. The patient died during the diuretic phase with hyperkalemia and azotemia.

CASE REPORT

A 25-year-old soldier was injured in an aircraft accident at 0300 hours on 14 April 1953. About 15 hours elapsed before he received medical aid. He was in shock when examined at the site of the wreckage. The blood pressure was 90/60 mm Hg, pulse 100, and the skin was pale and clammy. He had several large lacerations about the face and head with bilateral periorbital hematomas. Complete paraplegia from the level of the first lumbar vertebra was present with abrasions over the spine at this level. Several large contusions were visible over the sternum. An indwelling catheter was inserted into the bladder but no urine was obtained. The patient received 1,000 cc of whole blood, 1,000 cc of dextran, and 10 mg of morphine while at the wreckage and en route to the hospital. On his arrival at this hospital he began excreting small amounts of amber-colored urine which was immediately sent to the laboratory for analysis. The patient's sensorium was now clear, his skin was warm, and he appeared fairly well hydrated.

Laboratory Data on Admission. The hematocrit was 35 percent, hemoglobin 11 grams per 100 cc, and the white blood cell count

¹ From Madigan Army Hospital, Tacoma, Wash. Capt. Leigh now assigned to Walter Reed Army Medical Center, Washington, D.C.

11 200 with 90 percent neutrophils and 10 percent lymphocytes per cubic millimeter Urinalysis revealed amber color acid reaction 1 010 specific gravity a trace of albumin an occasional white blood cell and from 10 to 12 red blood cells per microscopic high powered field No casts were observed A markedly impacted fracture of the body of the first lumbar vertebra and complete disruption of the pedicular and neural arch structures of the first lumbar vertebra with disturbed relationship of the interspaces in this area were demonstrable by roentgenograms There was also a fracture of the inferior portion of the body of the sternum at the junction with the xiphoid

Course in the Hospital Shortly after admission the patient was taken to the operating room where his face was cleaned and sutured A laminectomy revealed marked compression and maceration of the cord at the level of the first lumbar vertebra Loose fragments of bone were removed and the incision closed He received 500 cc of whole blood during the procedure and left the operating room in good condition He was placed on a Stryker frame and given antibiotics intravenous fluids and a booster injection of tetanus toxoid

During the next 24 hours the patient improved considerably His blood pressure and pulse were normal he was taking clear fluids by mouth and his 24 hour urinary output increased to 1 500 cc Repeat urinalysis obtained from an indwelling catheter showed a specific gravity of 1 012 one plus albumin occasional white blood cells and from six to eight red blood cells per high powered field Between 15 and 22 April the patient showed progressive improvement His urinary output varied from 1 500 to 2 000 cc per day He was afebrile comfortable receiving visitor for short periods of time and eating a regular diet On the afternoon of 22 April the patient became apprehensive and complained of a cough which was productive of minimal amounts of old blood For the first time a pericardial friction rub was noted over the apex Because of bilateral sternal fracture an electrocardiogram and a roentgenogram of the chest were made The roentgenogram showed no change The electrocardiographic findings were suggestive of hyperkalemia His urinary output remained at 1 500 cc and his oral intake was excellent On the evening of 23 April the patient became dyspneic and disoriented and developed cyanosis limited to his neck and the upper part of his chest The diagnosis of a superior vena cava syndrome was considered however venous pressure and circulation times were normal The chest was clear clinically and on roentgenographic examination Repeat electrocardiograms showed severe hyperkalemia Hematocrit was 34 percent and the hemoglobin was 9 8 grams per 100 cc The blood pressure and pulse remained normal Serum potassium was 8 7 serum sodium 128 chloride 93 and the carbon dioxide capacity was 18 7 all in mEq/L The blood urea nitrogen was 245 mg per 100 cc Unfortunately urine electrolyte studies were not available

A tentative diagnosis of lower nephron nephrosis was made even though the patient's urinary output remained high except for the first 24 hours after his injury 10 days before



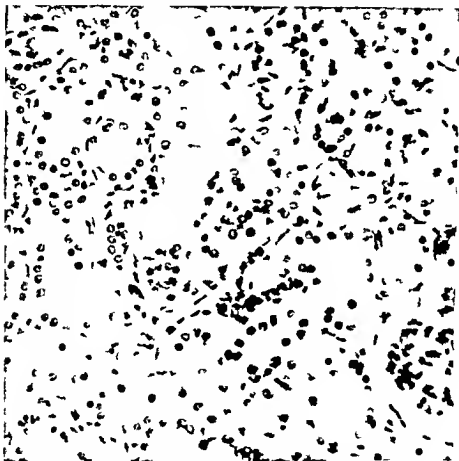
Figure 1 Hemisections of the kidneys showing intense congestion of medulla and pyramids and pole and swollen cortices

Ten percent dextrose solution with insulin were immediately started the patient's head was elevated and oxygen was given by catheter and tent. His urinary output was measured hourly and never dropped below 75 cc per hour until death. Fluids were carefully administered intravenously so as not to overhydrate the patient. On 24 April jejunal perfusion was begun after the method of Kelly and Hill⁶ in an effort to reduce the serum potassium. The perfusion fluid (1200 cc) was given by tube over a six hour period and 1150 cc aspirated back. However because the patient developed dependent edema and early pulmonary edema all infusions were stopped. At 0200 hours 25 April the patient died 11 days after his injury.

Necropsy Examination *Gross examination.* Gross postmortem examination revealed essentially the following: Pulmonary edema; kidneys which were overweight and edematous showing dusky medullae consistent with lower nephron nephrosis (fig 1); crushed lower lumbar portion of the spinal cord; a fractured sternum and extensive hemorrhage within the pectoralis major and minor muscles, iliopsoas and sacrospinalis group of muscles.

Microscopic examination. On microscopic examination within the cortex of the kidneys numerous areas of tubular degeneration were

noted. This was present throughout the cortex and involved principally the distal convoluted tubules and casts were present within these sectors. Areas of tubular interstitial rupture were seen and thrombi into veins within the ascending loop of Henle and collecting tubules were noted. Scarring in many areas was interpreted as an indication of healing (fig 2). The lung showed a marked degree of edema and hemorrhage within the alveolar spaces. Masses of macrophages typical of heart failure cells were present within the alveoli. Sections of the heart disclosed a slight amount of edema but no fibrosis or hemorrhage.



Figur 2 Photomicrograph of a section of the kidney showing hyaline and pigmented casts and areas of tubular interstitial rupture.

DISCUSSION

This patient presented many unusual manifestations of lower nephron nephrosis.

The patient was anuric for 15 hours following his injury but his urinary output reached normal levels on the second day and

remained high until the hour of his death, 11 days later. No granular or pigment casts were observed in his urine and the relatively few red blood cells were attributed to the indwelling catheter. He did not develop evidence of hypertension, although this may have been due to his paraplegia and concomitant loss of sympathetic tone. His relatively benign course between the second and ninth day was likewise unusual. Thus, of the various clinical, urinary, and vascular signs which Lucke³ described, anuria was present for only a short time.

Because the patient died during the diuretic phase of the disease, it is difficult to account for the extremely high serum potassium in the face of high urinary output. As far as we know this is the only patient with this disease in whom the serum potassium continued to rise to high levels during the diuretic stage.^{7, 9, 10} Indeed, the excessive potassium and sodium loss during this period is usually stressed in the literature. Moyer¹¹ stated that "because the rate of excretion of potassium salts by the kidney is extremely rapid, compared to that of sodium salts, potassium excesses do not occur spontaneously unless oliguria or anuria is present."

We postulate two mechanisms for this unusual occurrence.

1. The vast amount of direct tissue destruction which the patient sustained, coupled with the loss of muscle substance as a result of the paraplegic state, conspired to release tremendous amounts of potassium and other products of protein catabolism into the extracellular compartment which the kidneys, in their damaged state, could not clear even with ordinarily adequate urine volume.

2. The second possibility, admittedly remote, would be a selective reabsorption of potassium by the damaged tubules. We are not aware that such a mechanism has ever been described. The adrenals do not appear to be implicated because no evidence of adrenal insufficiency, either clinically or on necropsy, was found.

We believe that this patient might have survived had his precarious condition been discovered earlier. An infusion of calcium salts or hypertonic sodium chloride might have prolonged his life until an artificial kidney could have been secured and used.

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THE MEDICINE OF TOMORROW

Starting with undergraduate teaching the medical student must be indoctrinated by example as well as precept to the glamour and warm inner satisfaction that comes from doing the chronically ill individual to meet his total life needs. He must learn to get an ego glow from taking the old hemiplegic out of a wet bed teaching him to walk and to talk to meet the needs of daily living and to live ours de an institution and to be a person again. These accomplishment must give him the same satisfaction that he now gets from making a diagnosis of favism or anthrax.

If he does not develop such a feeling of inward satisfaction much of his professional life will be frustration. Whether he likes it or not the average general practitioner now spends three quarters of his time treating patients who are chronically ill or who have emotional problems involving social marital or economic pressures. This percentage will undoubtedly increase continually in the future.

When the medical student or young physician reaches the point of feeling a deep sense of accomplishment from his efforts to aid the chronically ill and disabled then he ceases to be a technician and becomes a physician in the true sense of the word for then he treats people rather than diseases.

—HOWARD RUSK M D

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Chromoblastomycosis

Laboratory Observations on the Causative Organism

KARL V KAESS *Commander (MC) USN*
CHARLES C REBERGER *Lieutenant (MC) USNR*
PIERCE T SLOSS *Lieutenant (MC) USNR*

CHROMOBLASTOMYCOSIS is a chronic, infectious, apparently noncontagious disease of the skin and subcutaneous tissue caused by several species of related fungi. Although the name, chromoblastomycosis, has been accepted by most authors, the names given the causative organism have not been uniform. Conant and Martin¹ and Carrion² have discussed this problem and attempted to clarify the nomenclature. The terminology of Carrion is used here.

By 1947 Carrion had collected 159 cases of chromoblastomycosis from the world literature. At that time 80 percent were from the tropics or subtropics, and 20 percent were from the temperate zones; only nine cases were from the United States. By 1954, the twenty-second case of chromoblastomycosis had been reported from this country—the last nine from a single area in Louisiana.³

Chromoblastomycosis has a slow clinical course and usually involves the skin of the extremities, rarely the skin of the face or trunk and even more rarely the deeper tissues.⁴ It has been found only in adults and 96 percent of the reported cases are in men.² Its several clinical types were classified by Pardo-Castello and associates⁵ into verrucous, tuberculoid, syphiloid, psoriasiform, cicatricial, and elephantiasic forms, according to the gross appearance of the involved skin. The species of causative organism does not correlate uniformly with any particular clinical form of the disease.⁶

The disease is usually treated surgically. Excision or electrocoagulation and curettage have been used successfully for many cases,^{7,8} but the cicatricial and elephantiasic forms may require amputation.⁹ Pardo-Castello and associates used roentgen ray therapy (from 600 to 1,200 r u filtered through 2 mm of aluminum) successfully in a few patients with limited involvement. Iodides, thymol,¹⁰ neoarsphenamine and pentamidine⁷ appear to have little effect.

Yew in a preliminary report indicated regression of numerous lesions in one patient following oral and intravenous sodium iodide, moist copper sulfate compresses and the local application of an ointment containing seven percent chrysarobin five percent salicylic acid and five percent phenol. Whether cure was obtained or not was not reported.

In recent in vitro studies of the fungistatic activity of various chemicals Bocobo and associates found that certain diamidines in concentrations of from 10 to 100 μg per ml of culture medium inhibited the growth of *Hormodendrum pedrosoi* (*Fonsecaea pedrosoi*) and *Phialophora verrucosa*.

CASE REPORT

A 36-year old boiler tender in 1947 while in Italy noticed for the first time a round reddened scaling painless area about one centimeter in diameter involving the skin just above the posterior aspect of the left elbow. The lesion gradually enlarged until at the time of his admission to this hospital on 26 April 1954 it measured 10 by 7.8 cm (fig. 1). During the patient's 17 years of service in the Navy he had visited many ports. He was in China and the Philippines from 1937 to 1940, he made several stays in Cuba from 1942 to 1944 and he visited numerous South Pacific islands from 1944 to 1945. He was unable to recall an injury to the involved area of skin at any time during his naval service.

The lesion (fig. 1) was a raised erythematous slightly acutely well demarcated irregular plaque with an elevated border. Scattered areas of nonelevated normal appearing skin measuring from five to eight millimeters in diameter were present within the borders of the involved area and other physical and laboratory examination findings were within normal limits.

A small piece of skin from the edge of the involved area was excised on 18 May 1954 for microtechnical processing and mycologic and bacteriologic examination.

Histologic Examination. Microscopic examination of sections of the specimen of skin presented varying degree of irregular acanthosis broadening, deepening and distortion of the rete pegs and hyperkeratosis of the epidermis. The immediately underlying dermis was involved by a chronic eosinophilic granuloma in which lymphocytes, epithelioid cells, Langhans giant cells and nests of neutrophils were abundant (fig. 2). The deeper dermis was not involved in this process. Scattered through the involved tissue and occasionally present within the giant cells were small numbers of brownish spherical to slightly oval thick walled occasionally septate bodies measuring from six to 18 microns in diameter (fig. 3). These were visible in unstained preparations as well as in hematoxylin-eosin stained sections and they stained with fuchsin using the periodic-Schiff reagent.

Mycologic Examination Culture of a portion of the biopsy specimen on beef extract blood agar Littman's oxgall agar and on Sabouraud's agar produced growths typical of *F. pedrosoi* variety *communis*² (fig. 4)



Figure 1 Appearance of patient's left elbow on his admission to the hospital

Fermentation studies were carried out on this organism using the following sugars dextrose levulose galactose maltose sucrose lactose and mannitol

No gas was produced in any of the sugars used No acid was produced in lactose or mannitol Acid was produced however in dextrose galactose sucrose levulose and maltose

Animal Inoculation Twelve white male mice and six white female rabbits were inoculated with a two percent weight in volume suspension in physiologic saline solution utilizing a 14-day old subculture from a primary isolate on Sabouraud's dextrose agar One half of the mice and rabbits were injected subcutaneously with viable material and the rest with autoclaved material all animals were sacrificed after eight weeks Histologically the mice showed abscess cavities filled with cellular debris brownish fragmented hyphal elements and small (four

to six microns in diameter) spores together with macrophages and polymorphonucleocytes. There was no evidence of a granuloma. Cultures of this material from the animals who received the viable inoculum yielded heavy growths of the organism under study. Cultures from the mice receiving the autoclaved inoculum were negative. Five of the six rabbits were negative on gross inspection and on histologic and mycologic



Figure 251. Histologic appearance of the granuloma ($\times 90$).

examination. One of the rabbits had been given 0.1 ml of the viable material intradermally. It developed a palpable nodule which histologically appeared similar to the abscess cavities seen in the mice. Culture of this abscess was negative.

Diamidine Sensitivity. In view of the reported evidence that certain diamidines exert an inhibitory influence on the growth of the causative mold of chromoblastomycosis, it was decided to test the effect in vitro of one of these agents, namely propamidine, against the subject organism.

Consequently graded amounts of the isethionate salt of propamidine dissolved in water were incorporated into Sabouraud's dextrose agar at a temperature of 45°C and pour plates were made. The following concentrations of propamidine were prepared in duplicate sets of plates: 0.5, 1, 2, 5, and $10\text{ }\mu\text{g}$ per ml of culture medium. In addition the solvent (water) was added to the contents of each of one set of plates in amounts equal to that used to dissolve the propamidine added to each of the other pour plates. The surface of each plate was inocu-

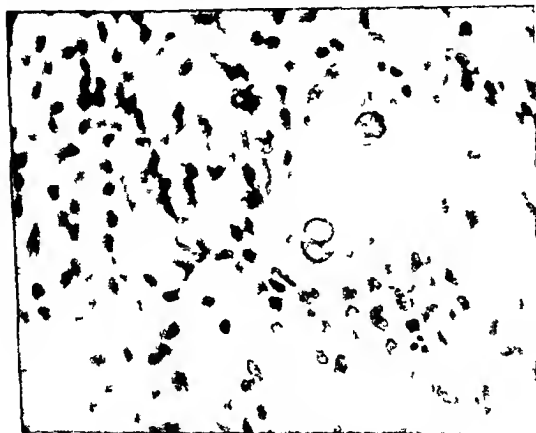


Figure 3 Section of tissue showing Langhans type giant cell with included tissue phase of the causative organism ($\times 740$)

lated with 0.3 ml of a five percent emulsion weight in volume in physiologic saline solution of the mycelial phase of the test organism. The plates were kept at room temperature and inspected every other day for three weeks.

At the end of one week there was heavy confluent growth on the plates containing the solvent and those containing 0.5 and one microgram per ml of propamidine. Slight growth in the form of a few minute colonies was evident at the two micrograms per ml concentration of propamidine. No growth was discerned at the higher concentrations. There was no change in the appearance of the plates at the end of two more weeks.

Bacteriologic Examination Cultures of the second biopsy specimen were negative for brucella actinomyces and nocardia. A guinea pig inoculation was negative for tuberculosis or other infectious disease.

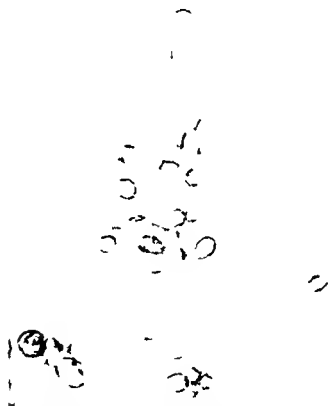


Fig. 4. B. b. g. plat. term. al. hypha u. th. br. b. g. sp. e. ha. s. Several large dislodged thick-walled spores at the lower left. (X 1000)

Treatment Bocobo and associates found inhibition *in vitro* of *H. ped osos* in a minimum concentration of 0.05 mg/ml of either diethylstilbestrol or methyltestosterone per ml of culture medium. Doses required to accomplish this concentration in body fluids would be expected to produce prominent undesirable hormonal effects.

The diamidines were found by Bocobo and associates to inhibit growth of their strains in a concentration of 0.01 mg per ml in the case of stilbamidine, 0.1 mg per ml in the case of pentamidine, and 0.1 mg per ml in the case of propamidine.

In our organism propamidine caused inhibition of growth in a concentration of 0.005 mg per ml of culture media, showing therefore

considerably greater sensitivity to propamidine than the strain used by Bocobo

Because of the expense of the drug and the size and location of the lesion surgical excision plus a skin graft was considered to be the treatment of choice in this case

We believe however that chemotherapy may have a real place in the treatment of chromoblastomycosis where the lesions are multiple or too extensive to lend themselves to excision and grafting Sensitivity studies are worth while if chemotherapy is to be considered In our patient propamidine probably would have been the drug of choice if the lesion had been less amenable to surgery

DISCUSSION

Chromoblastomycosis apparently is caused, in the majority of cases, by accidental inoculation of the skin with the causative fungus That the disease may be produced by cutaneous inoculation was demonstrated by Azulay,¹⁰ who introduced, by scarification, two drops of a saline suspension of the organism into the skin of a volunteer human being In three months the volunteer had developed a progressively enlarging lesion 15 cm in diameter which, over a year's time, became verrucous

Animal inoculation has been carried out in the case of rats, mice, rabbits, dogs, monkeys, guinea pigs, pigeons, and frogs with apparent success in all but the last two² Rats and mice are reported to be most susceptible by the peritoneal, subcutaneous, and testicular routes² Azulay reported production of granulomas by the testicular route in guinea pigs and rats, but, in his hands, the subcutaneous and peritoneal routes were unsuccessful¹⁰ We also were unable to produce the disease in female rabbits by cutaneous or subcutaneous routes or in male mice by subcutaneous injection It is of interest that Conant and Martin injecting three series of live suspensions of four strains of fungi causing chromoblastomycosis subcutaneously into rabbits, produced circulating antibodies and reactive nodules but did not produce the disease As shown from our own work, the organism may be isolated for a short period from the site of inoculation This we do not regard as proof of disease production but rather as a demonstration of the hardiness of the fungus We are further impressed by the similarity of the lesions produced by injection of sterile control suspensions to those produced by suspensions of the living organism

Fermentation studies by de Montemayor¹¹ were performed on six strains of fungi causing chromoblastomycosis as well as strains of several other fungi He found that organisms causing chromoblastomycosis grew best at 37 C and produced acid in

glucose maltose sucrose and galactose but not in lactose
Our fermentation studies are in agreement

Serologic studies to determine antibodies against this organism were not carried out

SUMMARY

A 36 year old man had chromoblastomycosis of the skin of the left elbow since 1947. Histologically the involved skin was the site of granulomatous inflammation and contained brownish spherical septate bodies. *Fonsecaea pedrosoi* was isolated from an emulsion of the diseased skin. Attempts to produce the disease by cutaneous and subcutaneous injection of a saline suspension of the organism into rabbits and by subcutaneous injection into mice were unsuccessful. The organism produced acid without gas in dextrose galactose maltose sucrose and levulose but not in lactose or mannitol. In vitro sensitivity studies were done using propamidine and growth of the fungus was found to be inhibited by a concentration of 0.005 mg per ml of culture medium by this agent. The patient was treated by surgical excision of the lesion followed by the application of a split-skin graft.

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Epidermoid Cyst of the Testis

JACK G OLSEN *Captain, MC USAR*
VICTOR O CALDERIN *Captain, MC USAR*

BENIGN testicular tumors have been regarded as rare Herbut¹ stated that they constitute from two to four percent of all testicular neoplasms Mostofi² however stated that testicular epidermoid cysts are more common than was previously thought He had observed a yearly average of two or three patients with this lesion

Testicular tissue, being totipotential, gives rise to a variety of neoplasms The inciting agents are unknown In the case here reported, a history of recurrent urinary infection was obtained Infection, therefore, might have played a part in the pathogenesis of this cyst Either metaplasia of the testicular epithelium or development of so-called cell nests has been assumed to explain the occurrence of tumors of the testis Nagol and Polley³ have presented an interesting discussion of the pathogenesis of testicular dermoids epidermoid cysts are generally considered a variant of this neoplasm

The clinical problem in managing testicular masses is differentiating the malignant from the benign before removal Because most are malignant, total orchiectomy should be done in doubtful instances In the cases reported by Cook and Kimbrough⁴ differentiation was made by palpation of the surgically exposed testis

CASE REPORT

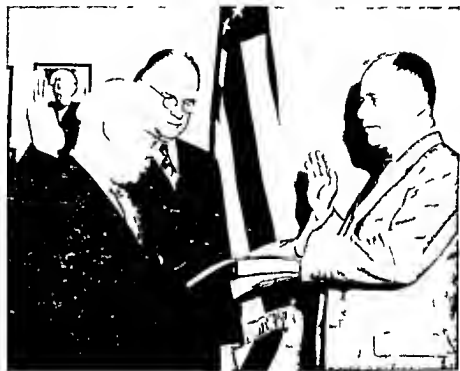
A 22 year old man was admitted to this hospital for study on 24 February 1954 Two weeks before admission he had noted a swelling in his right testicle followed by pain some time later He also stated that albumin had been found in his urine previously The remainder of the history was negative except for repeated episodes of sinusitis and urinary infection in the past On fist percussion he had bilateral tenderness over the kidneys There was an indurated localized tender mass about one centimeter in its greatest diameter on the lateral aspect of the right epididymis midway between the epididymal head and tail

Results of blood studies including an erythrocyte sedimentation rate and serologic test for syphilis and of a urinalysis were normal A roentgenogram of the chest and an intravenous urogram showed

From U S Army Hospital Camp Chaffee Ark

DR EDWARD H CUSHING, NAVAL RESERVE OFFICER NAMED DEPUTY TO DR BERRY

A Washington D C physician with Army service in World War I and naval service in World War II is the first Deputy Assistant Secretary of Defense (Health and Medical) Dr Edward H Cushing who has been a captain in the Medical Corps U S Naval Reserve since 1940 took the oath of office in a Pentagon ceremony on 3 March 1955



Dr Edward H Cushing right being sworn in as Deputy to Dr Frank B Berry chief Assistant Secretary of Defense (Health and Medical) by John E. Moore OSD Director of Personnel

For the past four years Dr Cushing has served in important Government posts. He is a former member of the National Research Council and has held faculty appointments at Western Reserve and George Washington Universities.

When Dr Cushing assumed his new duties Colonel Sheldon S Brownston USAF (MC) formerly executive assistant to Dr Berry was elevated to director for planning and liaison in the Office of the Assistant Secretary of Defense (Health and Medical).

PROGRAM OF A M A MILITARY MEDICINE SECTION, 7 9 JUNE

Scientific subjects of primary military importance but of interest to civilian physicians as well are scheduled for discussion by both civilian and military medical authorities at the annual meeting of the American Medical Association in Atlantic City, 6 10 June. The subjects to be presented at the Section on Military Medicine include handicaps and motivation, automobile accidents, effects of fallout radiation, the effect on the public of breaking the sound barrier, use of whole blood in military and civil defense emergency, psychological reactions in mass casualties, and modern concepts in the treatment of burns.

The chairman of this section is Major General I S Ravdin, member of the Civilian Health and Medical Advisory Council to the Assistant Secretary of Defense (Health and Medical) and John Rhea Barton Professor of Surgery, University of Pennsylvania. Colonel Charles L. Leedham, MC, USA, is concluding his second year as secretary.

Meetings of the section will be held on the afternoons of 7, 8, and 9 June. Point credits for retention and retirement may be earned by all eligible reserve Medical Corps officers of the Army, Navy, and Air Force on inactive duty who attend the sessions.

Following is a complete program of the presentations to be made before the section:

Tuesday 7 June

The Civilian Doctor and Our Future Security—Major General Isidor S. Ravdin, MC, USA (Ret.), University of Pennsylvania, Philadelphia, Pa.

Uremia like Symptoms Not Due to Uremia in Battle Casualties—Major William H. Meroney, MC, USA, Army Medical Service Graduate School, Washington, D. C.

Acute Coronary Insufficiency: Application to Military Medicine—Arthur M. Master, M. D., Columbia University; Harry L. Jaffe, M. D., and Leonard E. Field, M. D., New York, N. Y.

Handicaps, Motivation and the Performance of Duty—Colonel Lucio E. Gatto, USAF (MC), Sampson Air Force Base, N. Y.

Acute Infectious Hepatitis in the Armed Forces: The Advantages of Ad Lib Bed Rest and Early Reconditioning—Captain Thomas C. Chalmers, MC, USA, Army Medical Service Graduate School, Washington, D. C.; William

E Reynolds M D Chal S D vidso M D B t M Lt C mdr
R ha d D Eckh rdt (MC) USNR U S N v l H spital P tsmo th V
Joaquin G C gesso M D Laredo Te N rman D M D N w Yo k
Robert W Reife te M D Syracu N Y a d Cliff d W Smith M D
Il es Ill

P pt Ulce A M j P obl m M l t ry M d c s —J hn H Willard M D
U t ry of Pen sylva ia Graduat School f Med cin Phil d lph P

Wednesday 8 June

C a h d L v N d C K H M S l d Th G ?—Col D n S
W g USAF (MC) Dff f the Surge n G eral D pa tm nt f th A r
For W hingt D C

R p f H m B g A dent lly Expo d t S gn f t F l l t R d
at —C mdr R be t A Cona d J (MC) USN N t on l N val M d c l
C ter nd Lt N R phael Sh lma (MC) USN N l M d c l Re e rch
In t ut B th d Md C md E ge e P Cronk s (MC) USNR a d Lt
Victor P B d (MC) USNR Bookh e N u l L b tory L g l la d
N Y d Lt Richa d S F r (MC) USNR Ch cag Ill

Th C a d E acuat of V t m R f g —C mdr J l s M Amb son
(MC) USN N t l N val M d cal S h l B th d Md

B e k g th S d B m d l t Eff t th P bl —C l J h M T lb t
USAF (MC) A R h d D l pm t C mma d B l um Md

R p t of th Off f th A tant S t ry f D f —Frank B B ry
M D A t t t S tary of D f s (H lth d M d l) W h gt
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Thursday 9 June

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D f Em g cy—Lt C l W lliam H C by J MC USA d Lt Col
J ph ll Ak oy d MSC USAR Army M d cal S rv Grad t S ho l
W h gto D C

N g ment of l j r t th Thor x—B Blad s M D Ge g W h gt
U t ry School f M d s W ah gton D C

P y b l g al R t M Ca lt —Cap Elm L Ca y (MC)
USN (Ret) M d l College f Alabama B rni gh m Al

Th Prim ry C f l j r Ab t th F —Tuman G Block t Jr M D
Un ry of T School of M d cin Cal fo T x

Pri pl f M nag m t of D pen F tur s—Dsc t Hampto Jr M D
W h gt U ry S ho l f M d St L M

Mod rn Conc pt th T tm t f Burn —Lt C I C r P A t z MC USA
Booke Army M d cal C n F r Sam H son T

ERRATUM

D t typ graph o C mm nd Th ra D Gal (DC) USNR w
list d (MC) be M h 1955 p g 346, f th j m l

PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army, Navy, and Air Force have recently received temporary promotions to the rank indicated

Medical Corps

Leo H Al ande Lt Comdr USN	Gerald J F d Lt Comdr USN
Sydney B Al x d Lt Comdr USN	Robert F G b s Lt Comdr USN
Harry C. Alfred, Maj. USAF	Job J G e g w i c z Lt Comdr USN
Phard C. Am Lt Co dr USN	Andrew E. G r k y Capt USAF
H ld C And s on Lt Comdr USN	George W Ha b Lt Comdr USN
Fredrick P Asbury Lt Comdr USN	Robert E. H y s Capt USAF
Bruce F B ah Lt Comdr USN	Frederick M H al g m a n Lt Comdr USN
Edgar P Ba g, Lt Comdr USA	George V H a n g Lt Comdr USN
Ira M B t h Capt USAF	Newman A. H p g m s Lt Comdr USN
J hn L B skia Lt Comdr USN	John W H d Lt Comdr USN
W lt J B ge J Maj USAF	William B In g m, Lt Comdr USN
Howard F Bl eck s Lt Comdr USN	Ben B J h a n, Lt Comdr USN
Albert L Bl ke, Sr Capt USAF	Gordon S. Joh n Lt Comdr USN
Harry Bo t w g h Lt Comdr USN	Jack T Jo Jr Lt Comdr USN
Ang s L B e n n t Lt Comdr USN	Thomas R Judd Lt Comdr USN
Benjamin H Brown Capt USAF	Alpheus T K n e e d y Lt Comdr USN
C l e t n J B o w n, Lt Comdr USN	Edward L K u n d s Jr, Lt Comdr USN
Robert L B r d k Lt Comdr USN	Robert L K i g Jr Lt Comdr USN
Charles J B r m m, Lt Comdr USN	Aloysius L K u n z Capt USAF
Harry T C h a, Maj USAF	L J L a j t Maj USAF
R h r d k C C h g, Capt USAF	Joseph J Lambert Jr Lt Comdr USN
Graham M Coffin Lt Comdr USN	Fredrick R. Laune Lt Comdr USN
Holden Cogburn Lt Comdr USN	Dan I B Lem Lt Comdr USN
Edward L Cole J Lt Comdr USN	Robert H Lett m n Lt Comdr USN
H gh S Col q u i s t Lt Comdr USN	Mathew B L e r Capt USAF
Richard B C n a Lt Comdr USN	Chal W L w s, Lt Comdr USN
Monte E Co w y Lt Comdr USN	Chal W Lew J Lt Comdr USA
Reg A. Co Lt Comdr USN	Garter L L w Lt Comdr USN
John F C o t m m Maj USAF	William T L u n b e r y Jr Lt Comdr USN
George D a Lt Comdr USN	Robert A. Lo H l t Lt Comdr USN
T dor B C. Dav s, Lt Comdr USN	Glen W L o r z, Lt Comdr USN
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James P D a Lt Comdr USN	John R Lyddy Lt Comdr USN
R h r d F D o b b i n Lt Comdr USN	Wilma B Mahon Capt USAF
Adrian D o n k r t Capt USAF	Raymond J Man Lt Comdr USN
Robert O D u b e r n i Lt Comdr USN	John J M r r Lt Comdr USN
Stuart R. Ducker J Lt Comdr USN	Edward Martin J Lt Comdr USN
Adolph W Dun Lt Comdr USN	Donald G M s Lt Comdr USN
James Edward Lt Comdr USN	Robert L Mathi Lt Comdr USN
Ervin Ell Lt Comdr USN	Don E Mathi s n Lt Comdr USN
John C Es wein Lt Comdr USN	Richard E M Clain Maj USAF
William J Fagan Lt Comdr USN	John S M k e e J Lt Comdr USN
Ir L F t h Jr Lt Comdr USN	Fredrick W M e y e Jr, Lt Comdr USN
Larry L Feder Capt USAF	Ralph E. M u n h a r d t Capt USAF
Richard H F r g u s o n Maj USAF	Michael N M a n o v i c h Capt USAF
Robert R F i l Capt USAF	Stanley J J M i k i Lt Comdr USN
Martin E. Flips J Lt Comdr USN	Milton H Miller, Capt USAF

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 William G. Murr y Lt Comdr USN
 R h d L M rrl d, Capt USAF
 M rvin J N man Lt Comdr USN
 R h d D N m Lt Comdr USN
 R bert A. N ly Lt C mdr USN
 R bert L. N l Lt Comdr USN
 W d l l k N k l l Capt USAF
 J m B N Lt C mdr USN
 S w r t L Nun Capt USAF
 M m J O N d l Lt C mdr USN
 Roy T P ck Lt C mdr USN
 M rth w M P r Lt Comdr USN
 F d r k L P l C pt USAF
 J hn S. P r d z Lt Comdr USN
 H rry W P d l y Lt C mdr USN
 J b H P l d Capt USAF
 E t S. J R d l d, Lt Comdr USN
 W l l m C. R m b, J Capt USAF
 R bert E R Lt C mdr USN
 G g H R l y Lt C d USN
 P l R z Lt Comdr USN
 H rry L. R b r Lt Comdr USN
 J m S. R bert Lt Comdr USN
 Ch l E P g m Lt Comdr USN
 Alf d F R th l, Lt Comdr USN
 R bert E. R w d Lt Comdr USN
 R b e L Rad lph Maj USAF
 F d k K S hmidt, Lt Comdr USN
 R g D Sc Capt USAF

J m P S m Lt Comdr USN
 P al o Sha k l f rd Lt Comdr USN
 R h W Sha p J Lt Comdr USN
 Da l S S m Lt Comdr USN
 Cody L Sm th Capt USAF
 H r r L Sm th C pt USAF
 M rsh H. Sm th Lt Ca dr USN
 Ray M Sm th Capt USAF
 W l l iam R Sm th Lt Comdr USN
 J L Spa Maj USAF
 R E Sw Lt Comdr USN
 G g W T y l J Lt C mdr USN
 R lph J Th p J Capt USAF
 R b r t G Th mp n, Cal USA
 V P T ah, Lt Comdr USN
 F d A V l k Lt Comdr USN
 J h W Van Capt USAF
 Ge g T Van P te Lt Comdr USN
 Phal p H V lker Lt Comdr USN
 R bert O W d Capt USAF
 B m d J W l n f u m Lt Comdr USN
 J h f W l Capt USAF
 R b d W l Capt USAF
 R b e t D W h l y Capt USAF
 B vedy H W b Lt Comdr USN
 H m m A W h J Capt USAF
 J A W Cal USA
 K P W l l m Capt USAF
 Sydn T W th Lt Comdr USN
 Do ald E. W blrbe Capt USAF

Dental Corps

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 V A l l Capt USAF
 H rry a And so Capt USAF
 R b e A. And Lt Comdr USN
 Flw d R R m b Lt Comdr USN
 R lph M B h p Lt Comdr USN
 Do ld R. B own Capt USAF
 R bert G B l y Lt Comdr USN
 J ph G Ch d k Lt C mdr USN
 M rvin Carm Lt Comdr USN
 David V Ca J Lt Comdr USN
 Am W Ca J Lt Comdr USN
 Ch d B F r l l J, Capt USAF
 K n n th H Cill y Lt Comdr USN
 C r l l S. G o d Capt USAF
 J h P G u d Lt Comdr USN
 H m L H l l Lt Comdr USN
 R bert V l l, Capt USAF
 Seymour l f l Lt Comdr USN
 Jam L Jor s, Capt USAF
 G ald J K Capt USAF

C l l M X ey Lt Comdr USN
 M m C. Kl Lt Ca dr USN
 P b e J L w Lt Ca d USN
 L w r K L w Lt Comdr USN
 P l K M x w Lt Capt USAF
 Gl H M Ge Lt C dr USN
 M to Mo n so Lt Comdr USN
 J m E M on Lt Comdr USN
 K th R M Capt USAF
 J rry N vak Lt Cal USAF
 G r l on H Ro l tad Lt Comdr USN
 M rvin H Sc r Lt Comdr USN
 R bert W Sm b, Capt USAF
 J rom J Lt Comdr USN
 B lto S. S phen Capt USAF
 W l l Y T k Lt Comdr USN
 J h J T ta Maj USAF
 F l T T m Lt C mdr USN
 V l C. Van Cl ve Capt USAF
 J y K W Capt USAF
 Carl L W l h l t, Lt C mdr, USN

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 William F Bler *Capt. USAF*
 Lester C Bernad *Capt. USAF*
 Cart r G Brooks *Lt. Comdr. USN*
 Charles E Curtis *Lt. Comdr. USN*
 Harold G Don a *Lt. Comdr. USN*
 John J D gan *Capt. USAF*
 Clinton I' D t h *Lt. Comdr. USN*
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 Manie J E ell *Capt. USAF*
 Scott M F kl *May. USAF*
 Jam P Fom z, *Capt. USAF*
 Russell R F w *Lt. Comdr. USN*
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 I nn B Gr m *Capt. USAF*
 G g M H d k *Capt. USAF*
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 R bertann B Huff, *Capt. USAF*

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 Joseph E Keyes *May. USAF*
 Arthur N King, *Lt. Comdr. USN*
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 Loro P K i kland *Lt. Comdr. USN*
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 Jack M Sh ley *Lt. Comdr. USA*
 Paul S c m l e *May. USAF*
 Cecil D Tayl *Capt. USAF*
 Lester K Th mp on *Lt. Comdr. USN*
 Woodrow T k *Capt. USAF*
 William F V n *Capt. USAF*
 Evelyn L d n g h m *Lt. Comdr. USN*

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 L vo ne R Audette *Capt. USAF*
 Virginia C B lden *Lt. Comdr. USN*
 Mary E B z l d *Capt. USAF*
 Ruth A Brown *Lt. Comdr. USN*
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 D a M Cic *Capt. USAF*
 Mary M Cl k *Capt. USAF*
 Adey B Cach *Capt. USAF*
 Margaret J Cale *Capt. USAF*
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 G i W Camb *Capt. USAF*
 Charlotte R. F t w *Capt. USAF*
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 Eleanor F Grav ll *Capt. USAF*
 Jeanette Greyd nus *Capt. USAF*
 Mary J G ffin *Capt. USAF*
 Syl R H l l e *1st Lt. USAF*
 Adey E Han *Capt. USAF*
 Elizabeth H n o s s, *Capt. USAF*
 M na B J nes *Capt. USAF*
 St il v J tkw *Capt. USAF*
 D ph na J j s *Capt. USAF*
 Cl dys A K lisch *Capt. USAF*
 Irene J k r ka *Capt. USAF*

Bel G Kl *Capt. USAF*
 Miss R Kl e *Capt. USAF*
 Miriam L pin *Lt. Comdr. USN*
 Vera M Lo gbottom, *Capt. USAF*
 Joseph A. M t r o *Capt. USAF*
 Patricia A. Mart e *Capt. USAF*
 Beryl S. Martin *Capt. USAF*
 Margaret R. M Grego *Capt. USAF*
 Patricia A. McMa *Capt. USAF*
 Elia C. Mess r *Lt. Comdr. USN*
 Robert H. Mott on *Capt. USAF*
 Cathleen L O N ll *Capt. USAF*
 Dorothy A. P rry *Capt. USAF*
 Nancy A P p *Capt. USAF*
 John P Sal d re *Capt. USAF*
 John F Se t z *1st Lt. USAF*
 Ruth M Sh w *Capt. USAF*
 Glad S. Stewart *Capt. USAF*
 Francis J T h *Capt. USAF*
 Nida M. Ver ch *Capt. USAF*
 Mary E. Wall c *Capt. USAF*
 Ellen E Welborn *Capt. USAF*
 Dorothy G W st *Capt. USAF*
 Marjorie E Whit *Capt. USAF*
 Mary E Williams *1st Lt. USAF*
 Doris G Wint rs *Capt. USAF*
 Wanda M Wollert *Capt. USAF*

Women's Medical Specialist Corps

Milly J And so *Capt. USA*
 Id J Co sin *1st Lt. USAF*
 Betty L E. J hnson *Capt. USAF*

H n et S L Cal *USA*
 Emma N ubardt *1st Lt. USAF*
 Agnes P S yder *Lt. Cal. USA*

NEW N R C ARMY EDUCATION COMMITTEE VISITS SAN ANTONIO ON FIRST FIELD TRIP

On its first field trip the new Army Medical Education Committee of the National Research Council recently inspected the training facilities of the Brooke Army Medical Center in San Antonio Tex. This month the group will visit William Beaumont and Fitzsimons Army Hospitals.



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M dical Scho l D Frankl C. M L P f ssor Eme t of Phy iology
U w ity of Chic go, Dr Gaylord W Ander Dw tor d M y P f
so U ver ity of M ot S hool of P blic H lth Dr Thoma Badl y
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A ista t Surgery H rva d M dical S hool

The committee of well known medical educators replaces the former Advisory Committee of the Army Medical Service Graduate School. Instead of being limited to the scope of oper t ons of the school it will deal with professional educ tion and training problems of the Army Medical Service in its entirety and will act in an advisory capacity to the Surgeon General.

Dr Dean A Clark Boston is chairman of the committee and Dr Thomas Bradley W shington D C is executive secretary.

A MESSAGE FROM THE A M A

The Commission on Organization of the Executive Branch of the Government (Hoover Commission), in one of its recent reports to the Congress, said that Federal medical services cost \$4 149 000 000 in 1954 including over \$2 billion in disability allowances—and a great deal of waste which could be prevented. In case this is not readily comprehended the studies show that today the Federal government has undertaken specific responsibility for all or part of the medical care of 30 million people, roughly about one out of every five persons in the United States. The Commission's studies indicate that little fundamental improvement in Federal medical services has been made since March 1949 when it conducted a similar study and made a report to the Congress.

It is not surprising to learn that three government agencies—the Veterans Administration, the Department of Defense, and the Department of Health, Education, and Welfare—together account for over 90 percent of the total Federal expenditures for health activities or that the Veterans Administration alone accounts for over 60 percent of these total costs. Nevertheless, the report points out that by restricting medical services and disability payments to those veterans properly entitled to them, the government could save \$320 million a year.

Since 1949 the number of civilian veterans has been increasing at the rate of almost one million per year. They now number 21 million. Therein lies the politics which anathematize a realistic and practical solution to that part of the problem.

A careful analysis of this report clearly reveals that two segments of our population have been given undivided and abundant medical service to such an extent that it is aptly referred to in the report as "chaos" and "huge wastes." What has been and is being done about national survival for the rest of our population? What does the report say about the medical aspects of civil defense preparedness?

Unfortunately this 76-page report devotes only 17 lines to health planning for total war. The present status of medical planning for civil defense is described in the first two sentences of that portion of the report which says, "Our task force is particularly disturbed by the absence of a complete medical plan for

In the Council on National Defense of the American Medical Association. This was a document presented to the committee only by the Department of Defense.
—Editor

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Reviews of Recent Books

SURGERY OF THE HEART by *Charles P. Bailey* M D 1 062 pages 1 452 illustrations on 671 figures and 3 plates in color Lea & Febiger Philadelphia Pa 1955 Price \$25

This is the first publication that brings together under one cover a comprehensive and detailed study of surgery of the heart. The material presented is based largely upon the author's own experience in the field of cardiac surgery, an experience which in volume is probably unequaled in the world today. For this reason alone, the book immediately becomes an invaluable contribution to surgery. It is written primarily for surgeons, but internists, cardiologists, and pediatricians could greatly benefit by including it in their selective reading. Practicing physicians and undergraduates can find helpful information in regard to modern concepts of surgical treatment of heart disease.

The book begins with a brief but delightful resume of the development of cardiac surgery, including transient visions of future developments in this field. There follow essentially three compartments. The first six chapters contain enlightening discussions of general interest, including anesthesia, hypothermia, exploratory cardiotomy, the heart-lung machine, and cardiac resuscitation. The remainder of the book is divided into surgery of congenital heart disease and of acquired heart disease. On congenital heart disease, all well-established procedures are given, as well as some revolutionary methods of correction of the more complicated anomalies. Some of these are yet in developmental stages and are obviously subject to acute critical analysis in the light of future experience. Particular reference is made to the ingenious but complicated two-stage method for correction of transposition of the great vessels. The section on surgery of the mitral valve is the most complete available and is highly recommended for those whose experience is minimal.

All topics are attended by considerable interesting historical background, and the author draws heavily and accurately from medical literature. The bibliography is extensive and valuable as a source of reference material. The index is brief and is inadequate for location of other than major topics of interest. This book is highly recommended as a reference for those in any way interested in cardiac surgery.

—LUTHER G. BELL, Capt (MC) USN

BIOCHEMICAL DETERMINANTS OF MICROBIAL DISEASES by *Rene J. Dubos* 152 pages Harvard University Press Cambridge Mass 1954 Price \$3.50

This book is a welcome addition to the list of Harvard University monographs in medicine and public health. It is composed of a series

of e says dealing with the biochemical f ctors which influence the ability of microbi l gents to proliferate and to cause disease The author points out that although infect on is commonplace only a small percentage of inf cted ind viduals devel p sympt ms or pathological le ions His e says delve i to the reasons for this with emphasis on the p opert e of the infected ho t that determine the course and out come of the infect n

The effects of tissues body fluids ph gocytes and their biochemical constituent on m cro-organisms n vivo are considered In addition the toxic effects of infecti ns including the Shwartzman phenomena and the Arthus eaction re analyzed There is an interesting an lysis of the type of mmun ty which exists in the absence of detectable protective antibodies

The material has bee gathe d fr m a large number of sources a d is organized uperbly The bo k is well written and stimulating to read There are numerous tables illustrating the effects f various sub tanees on growth and toxic ty of m cro rganisms and a complete biography Th f mat s excellent and adds con siderably to the vol ume read bility —EUGENE V JOBE Capt (MC) USN

RENAL FUNCTION d t d by St l y E B d l y M D 218 p ge ll
 trat d Sp d by J i h M y J F und t N w Y k N Y
 1954 P t d by C I M y & C I e N w Y k N Y P
 \$3 75

This book which presents the tr nsactions of a conferenc is org n ized into sections on the nephrotic syndrome k dney transpl ntation and acute renal f ilure A formal present tion on each topic furnish s a point of departure for w de t ng and lively di cussion by the other experts present Inf rmal ty is well preserved so that the re d r may particip te vicariously in the give and take In the process also pre served are some ambiguities and non sequiturs

The book begins with a discussion of the sodium retaining adenal corticoid found in the urine of patients with nephrotic syndrome or other edema st tes The nature and definition of nephrosis its relation (if any) to glomerulonephritis the relation of glomerular filtration rate to sodium excretion and the validity of creatinine and inulin clear ances in disease are briefly discus ed followed by a summary of expert ence on treatment of the nephrotic syndrome with ACTH and adrenal steroid

Because me ger literature is available on kidney transplantation in man the second section i esp ci lly valuable in presenting an interesting preliminar y report on the oper tion in 10 patients Although the results in none of these were finally successful the responses in two patients g ve encouragement to continued study One achieved an unusual degree of f nction though tran ient and the other an ex ceptional survival (f ve nd one half months) of the r nsplanted kidney

The last section concerns renal pathophysiology in acute tubular necrosis. The composition of the urine is said to suggest that there is an "osmotic diuresis per nephron" though proof appears impossible. The replacement of sodium chloride and water during the diuretic phase is a controversial subject evoking much speculation about mechanisms of the regulation of body volume, composition and osmotic pressure. Other subjects mentioned include the role of infection in the disease, the use of hemodialysis and experiences with various dietary and intravenous feeding regimens in treatment.

This book should appeal particularly to the clinical investigator interested in renal and fluid and electrolyte physiology.

—MARION E McDOWELL, *May* MC USA

THE CONCEPT OF SCHIZOPHRENIA by W F McAuley M D 145 p ges
Philosophical Library New York N Y 1954 Price \$3 75

This book by its small size and restriction to a single entity appeals to student, teacher and busy practitioner. One is quickly impressed by its readability, clarity and conciseness.

A brief recital of the concept of mental illness held by ancient philosophers is followed by a survey of Kraepelin's observations which led him to conceive of dementia praecox as an entity. Significant contributions of many workers in psychiatry and related fields are presented sequentially so that the concept of schizophrenia comes into clearer focus yet at the same time has its boundaries extended. Current thought relative to the role of heredity and environment, neurophysiology and metabolism and early diagnosis and treatment are included.

In no other single source has the reviewer found the gamut of significant contributions on the subject winnowed, abstracted and presented so smoothly, objectively and interestingly.

EATON W BENNETT *Col* MC USA

TREPONEMATOSES by T Guthe M D and R R Willcox M D 79 pages
27 illustrations World Health Organization Palais Des Nations Geneva
Switzerland publisher 1954 Columbia University Press New York
N Y Distributor Price \$0 50

This publication is a reprint of a special 1954 number of the *Chronicle* of the World Health Organization. The authors discuss the changing concepts in the epidemiology and control of the treponematoses: syphilis, yaws, pinta and bejel. Emphasis is placed on nonvenereal syphilis in children and young adults in regions of Europe, the Middle East and Africa. This type of endemic syphilis is considered an important problem; its incidence depends on return to conditions of poverty, over crowding, war or a combination of factors.

The symptomatology and serologic relationships of the four treponematoses are excellently summarized. Mass use of penicillin is discussed and the importance of repository preparations is emphasized.

The progress of antitreponem roses campaigns of the WHO and UNICEF in various parts of the world is concisely reviewed. Emphasis is placed on international co-ordination of research particularly in regard to standardization of serologic reagents and methods.

This paper bound publication has a detailed table of contents is well illustrated with maps tables graphs and photographs and the documentation is adequate. At the end of the publication is a good bibliography on treponematoses control although all of the references in this section are from publications of the WHO or affiliated agencies.

This publication is of general interest but of particular value to public health workers and those engaged in treponematoses problems in the field and laboratory.—PAULA KEENEY C I MC USA

SHOCK AND CIRCULATORY HOMEOSTASIS edited by Hald D G Jr, M D
230 p g ill t ted Jo inh M y J Found t N w York, N Y
1954. P c \$3 50

This book is a report on the Third Conference on Shock and Circulatory Homeostasis and is divided into three separate topics. The first part covering experiences with shock in the Korean conflict was presented by Dr. John Howard and concerns the problems encountered in the management of shock in severely wounded patients at a forward hospital. The discussion that follows gives real insight into the problems of shock following injury. The second part on reflex factors in the regulation of the circulation was presented by Dr. G. S. Dawes. In the discussion present day thinking of an important phase of the physiology of the circulatory system is outlined. The last part covers functional properties of blood vessels presented by Dr. Robert Alexander. The queries by various members of the Conference bring out the concepts of the mechanical properties of the vascular bed.

The book is well indexed and contains excellent references at the end of each section. It is recommended for physicians interested in physiology and persons carrying out investigative studies in the field of circulatory dynamics. It is fascinating reading revealing the concepts of various experienced research workers who freely discuss the topics involved.—CURTIS P. ARTZ Lt Col MC USA

TEXTBOOK OF PEDIATRICS edited by W. Id E. N I M D 6th ed
1581 p g s ill t t d W B Sa der Co Phil delphi Pa. 1954

This book is a continuation of the Griffith-Mitchell and Mitchell Nelson series of textbooks of pediatrics. The sixth edition now rightfully becomes Nelson's *Textbook of Pediatrics*.

The editor's first desire was to make the text as representative of current pediatric thought and practice as possible. To accomplish this many sections have been completely rewritten and many others largely so. Also several new ones have been added. With the collaboration of

70 contributors the editor has been eminently successful in making this text up to date. It will certainly retain its place as a standard pediatric reference in the English speaking countries.

This edition although slightly shorter than the last contains many added practical features such as completely revised chapters on drug therapy tumors and neoplasms preventive pediatrics and the administration of parenteral fluids. One would be hard put to find any aspect of pediatrics in its broadest sense not satisfactorily covered. The style, although the product of many contributors is with very few exceptions extremely lucid. There are more than 400 helpful illustrations 20 of which are in color. The typography and format are of the highest order.

This book is enthusiastically recommended to anyone interested in the medical care of children. In my opinion an effective and practical answer to almost any pediatric problem that might face the medical student or practitioner will be found in this textbook.

—THOMAS E. CONE, Jr. *Comdr (MC) USN*

THE MICROPHYSICAL WORLD by William Wilson Ph.D. D.Sc. 216 pages illustrated. Philosophical Library Inc. New York N.Y. 1954. Price \$3.75.

This very readable small volume on the general topic of the physical sciences is written especially for the layman. It is not considered suitable for reference material because numerous topics are discussed too briefly for rigorous complete treatment of data although sufficiently to give the reader an understanding of the relationship among a variety of topics such as spectra and spectroscopy x-rays radioactivity and many similar subjects relating to atoms and molecules. Considerable attention is given to historical development of certain phases of the topics as well as modern theory.

The book is of convenient coat pocket size consisting of 13 chapters a short bibliography and an adequate index. It contains comparatively few illustrations and graphs and no actual photographs. The equations used to develop a final equation are well described.

—ROY D. MAXWELL *Col MSC USA*

THE THEMATIC APPERCEPTION TEST AND THE CHILDREN'S APPERCEPTION TEST IN CLINICAL USE by Leopold Bellak M.D. 282 pages illustrated. Grune & Stratton Inc. New York N.Y. 1954. Price \$6.75.

In the author's words "this book is meant primarily to be of practical use to the student and practitioner of clinical psychology and psychiatry. While it offers many specific suggestions for improving the use of the thematic apperception test (TAT) it does not present a detailed scoring system. The approach is that of presenting a theoretical framework which will assist the clinician in making analytically meaningful interpretations of TAT responses. About half of the book is devoted to the children's apperception test.

In a theoretical chapter the author discusses the ego psychologic theory of projective technics the apperceptive distortion theory concerning content of responses and the basic assumptions for diagnostic inferences from the TAT. Several chapters concern the use of the TAT including a brief discussion of 20 different methods of scoring and several case illustrations and its application in psychotherapy.

The children's apperception test (CAT) is a direct descendant of TAT and is designed for use with children from three to 10 years old. Animals rather than persons are used in the stimulus pictures. The CAT supplement (CAT S) was designed to supply pictures for use in special situations. The theoretical framework presented for the TAT is considered to be basically valid for the CAT and the CAT S. The analysis and interpretation of the CAT is considered in detail with a tabulation scheme presented for each separate card.

This book which is based on extensive clinical and academic experience is recommended to all users of projective tests. It is readable and the material is organized for ready reference. Technical terms and concepts are defined as introduced.

—ANTHONY C. TUCKER, C 1, MSC USA

THEORY AND PRACTICE OF CROWN AND BRIDGE PROSTHESIS by Stanley D. Tylma. D.D.S., M.S. 3d ed. 1017 pages, 1364 illustrations. 9 color plates. The C.V.M. by Co. St. L. Mo. 1954. Price \$16.

This new edition of a well known text and reference work contains six chapters and some 200 pages not found in previous volumes. It is profusely illustrated and contains excellent reference listing at the close of each chapter.

The new material includes a discussion of the indirect technique in crown and bridge construction with emphasis on the use of newer dental materials peculiar to this technique, recent progress in the use of cutting instruments, and evaluation of newer methods of pulp protection both during and after operative procedures.

Several chapters are devoted to a discussion of the physical properties and the techniques of using acrylic resins in crown and bridge prosthesis. The closing chapter entitled "Oral Rehabilitation" contains a well presented discussion of the factors to be considered when approaching a case of bite opening. A thorough study of all anatomic features associated with such procedures is advised and several methods of obtaining data on test positions of the mandible are outlined.

Biomechanical considerations are stressed throughout the text, a feature this reader believes cannot be overemphasized in a work so widely used in the teaching of this complex subject.

—DONALD C. HUDSON, C 1, USAF (DC)

PSYCHOANALYTIC INTERPRETATION IN RORSCHACH TESTING by
Roy Schafer Ph D 446 pages Grune & Stratton Inc New York N Y
 1954 Price \$8 75

This book is for the experienced Rorschach tester who possesses an understanding of general analytic theory but the discussion of the nature of the Rorschach response process and the dynamics of the test situation makes it recommended reading for less sophisticated workers. It is divisible into four major parts (1) a consideration of the dynamics of the test situation with emphasis on the tester patient relationship (2) the Rorschach response process as representative of various aspects of the dream-sleep-perception continuum (3) a consideration of content or thematic analysis along with cautions and safeguards to be observed in such interpretations (4) a detailed study of actual Rorschach test responses against the framework of four main mechanisms of defense: repression, denial, projection, and the obsessive-compulsive syndrome.

The original insight displayed by the author recommends the book as indispensable to the Rorschach worker. His rigorous, objective, and scientific attitude while attempting to advance extremely complex theoretic speculations is most commendable, and his introductory emphasis on cautious thematic interpretation should please the most conservative psychologist. If he slightes formal analysis and over-emphasizes the importance of a psychoanalytic point of view, this is understandable because he is attempting to present a particular methodology. However, when he uses some interpretations of an obviously naive, unskilled, and inexperienced tester and implies that these represent the eclectic position, and then proceeds to belabor the eclectic psychologist with this as his rationale, one wonders what has become of the detached scientist.

But if these are serious flaws in an otherwise stimulating and thoughtful publication, the final value of this sensitive, complex, and creative presentation is worth many times the price of the volume. It is easily one of the 10 best books written on the subject of Rorschach testing. —WALTER J GLEASON First Lt. MSC USA

ESSENTIALS OF PEDIATRICS by *Philip C. Jeans* M.D. *F. Howell Wright* M.D. and *Florence G. Blake* R.N. M.A. 5th edition 808 pages
 103 illustrations including 3 color plates J. B. Lippincott Co. Philadelphia Pa. 1954 Price \$4 75

This book has been one of the standard texts used in the instruction of student nurses for many years. It is well planned, and the style is simple, readable, and stimulating. The first section on "Orientation" includes an introduction to pediatric nursing and touches on preventive pediatrics. This is followed by Growth, Development, Care, and Guidance of the Infant and Child. The other unit headings are General Nursing Care, Nursing in the Care of the Sick Infant and Child, and

"Nutrition and Nutritional Diseases" These provide a comprehensive coverage of all aspects of pediatric nursing. An especially valuable teaching feature is the group of questions or, as the authors term them, "Situations for Future Study" at the end of each subdivision.

The brief discussions on diagnosis and treatment which accompany the descriptions of the various diseases are especially gratifying to a physician. They are informative enough so that a nurse can intelligently follow, understand, and appreciate the reasons for a doctor's orders, but at the same time they will not lead her into the perils of half knowledge or make her into the nurse learned that Osler so deplored in his essay "Nurse and Patient."

The index is complete, the bibliographies are adequate, and the illustrations are of good quality. This book is highly recommended for student nurses and nurses who are taking postgraduate courses in pediatrics. The fact that in the past 20 years it has passed through five editions in itself shows the place the book has earned in the field of pediatric nursing instruction.—JOHN F. SHAUL, *Comdr (MC) USN*

A HISTORY OF MEDICINE in Two Volumes by Ralph H. Major, M.D. 1155
page illustrated Chapter 1 C. Thomas Publisher Springfield Ill
1954 Price \$14.50 c.

Five English-language histories of medicine (either new or in new editions) have appeared during the last decade, and now we have a sixth. In his preface the author tells us that he has attempted to write a continuous account of the stream of medical history punctuated with the names of eminent physicians, and that the work is written primarily for the medical student and the medical practitioner in an attempt to interest them in the history of their own profession. The book begins with primitive medicine, proceeds through the history of Greece, Rome, the Middle Ages, and the Renaissance, and then by centuries down to the present time, with a separate excursion into American medicine of the early nineteenth century. Following each chapter is a section of biographical addenda which gives brief sketches of men not mentioned in the narrative portion of the work, or which gives additional data on those who are mentioned. These addenda are generally arranged chronologically by date of birth.

Unfortunately, this book can best be described as a rather inconveniently arranged medical biographic dictionary. Over 2,000 famous physicians are mentioned in half that many pages. Of one man we are told that he wrote a treatise on hellebore and was an advocate of cold baths; of another that he was a quarrelsome person and in constant strife with the College of Physicians. We learn, for example, that Benjamin Waterhouse (1754-1846) carried on a crusade for vaccination that resulted in his impoverishment, resignation from a professorship at Harvard, and the loss of much medical practice; but that James

Jackson (1777-1867) on the other hand who succeeded Waterhouse at Harvard in 1812 and who was also a crusader for vaccination was a conspicuously successful physician if there is anything else involved here besides the fact that Jackson was born 20 years after Waterhouse and died 20 years after him to account for their varying degrees of success we are left to speculate as to what the factor may be

The author reminds us that the good physician throughout the ages has felt the urge to impart his knowledge to other members of his profession and the desire to record the lives and deeds of outstanding physicians. But history involves more than recall it involves an attempt to recreate the past to place ideas in their proper settings to show the development of those ideas as well as to chronicle the fleeting figures who pass across the scene the historical sense as Lionel Trilling says is to be understood as the critical sense. What Dr. Major has produced is not a history but an act of reverence for which he merits our respect if not our acclaim.

—FRANK B. ROGERS Lt Col MC USA

THE YEAR BOOK OF GENERAL SURGERY (1954-1955 Year Book Series)
 edited by Everts A. Grabam M.D. 500 pages illustrated The Year
 Book Publishers Inc. Chicago Ill. 1954 Price \$6

This book is a representative review of general surgical literature. The majority of articles reviewed and abstracted are of domestic origin; however, an effort has been made to include the available surgical literature of all countries whose journals were obtainable. This volume is similar to and compares favorably with previous and companion volumes. The abstracts are conveniently arranged according to subspecialties or anatomic areas such as cardiac surgery, the abdominal biliary tract, pancreas, esophagus, and genitourinary system in 33 subsections. A section on anesthesia edited by Stuart C. Cullen M.D. is added. The volume contains two indexes, one for subject material and one for authors.

The author has done well in preparing and compiling abstracts of the best and most representative papers in recent surgical literature. The volume is suitable for use as a quick and ready reference as a guide to determine the trend in recent surgical publications. The reviewer recommends that it be used in this manner rather than as a substitute for more complete study and reading. The material abstracted is of necessity brief and often misleading to those who have not completely reviewed the literature. For example, on page 372 where the reviewer is reporting the technique for treatment of hiatal hernia of the diaphragm, there is a statement that sutures should be passed through all layers of the esophagus. Reference to the original article reveals that the author states that sutures should be passed through all layers of the diaphragm. To one who is experienced in performing this type

of operative procedure the typographical error is obvious but perhaps not to the inexperienced or one who has not studied the subject completely

Dr Graham is to be congratulated for accomplishing a gigantic and important task of abstracting and compiling pertinent surgical literature in such a complete convenient and well organized manner His excellent literary style illustrations organization and indexes add to its value This book should be available to all surgeons and especially to all physicians who need a quick and ready reference to representative abstracts of articles from the surgical literature of the year

—ROBERT T GANTS C 1 MC USA

ESSENTIALS OF REMOVABLE PARTIAL DENTURE PROSTHESIS by Ol
C Appl g t D D S D D S F A C D 323 pag 352 il
trau w th 10 1 W B Sa d C Ph l d lph P 1954

The author has satisfied one of dentistry's pressing needs by presenting a text which sets forth sound modern concepts in the field of partial denture prosthodontics Commendable simplicity is obtained through a direct question and answer style and through the generous distribution of carefully selected illustrations The complete table of contents an abundance of cross references and well organized index make for easy use of the book

Oral examination office and laboratory procedures denture maintenance and patient education are capably considered The general pattern followed throughout is to emphasize fundamentals first and then apply the pertinent factors to situations encountered in practice Kennedy's classification of partially edentulous mouths is used advantageously to place any restoration problem in one of four basic groups An understanding of characteristic designs that satisfy the requirements of each group is facilitated to make possible the mastery of denture planning Modification of the primary design to meet individual needs is discussed Unfortunately numerous editorial errors mar an otherwise skillfully prepared text

—ARTHUR R FRECHETTE Capt (DC) USN

MEREDITH'S HYGIENE by A th F D D P H d Warr H S th
worth D P H 5th d t on 906 page Il u r t d Th Blak t C
I c N w Y k N Y 1954 P i \$6

The fourth edition of this comprehensive and excellent textbook for college students has been extensively rewritten and brought up to date although the basic organization of the previous edition has been maintained The authors have drawn widely from official and voluntary health agencies for latest statistical data and health information The greater portion of the volume is given to the part entitled "The Hygiene of Everyday Life" which concerns physiology and personal hygiene The medical information presented throughout the book is sound The

M y 1955)

material in the five chapters in the section on mental health is very clearly presented and should be easily understood by the average college student. Throughout the work the responsibility of the individual for protecting and promoting his own health as well as the health of others is stressed.

The material is well organized, presented in a concise manner and should be of interest to all concerned with health education. There is an excellent bibliography of recent reference material and a comprehensive list of educational motion picture films with descriptive information and sources of procurement. This appears to be the type of book a college student would wish to keep for future reference. In addition, it is recommended for physicians concerned with community public health, nurses and educators. —GEORGE R. CARPENTER Col MC USA

EMERGENCY TREATMENT AND MANAGEMENT by *Thomas Flint Jr M D*
303 pages W B Saunders Co Philadelphia Pa 1954

In this book the author has collected and organized information on the recognition and treatment in both medical and surgical emergencies at the level of the "emergency physician." The material has been arranged partly in outline form, listing the prominent symptoms and physical findings in many conditions which may require urgent or immediate treatment. The conditions are listed in alphabetic order under diagnostic titles, which detracts from the value of the book as a ready reference for aid in the differential diagnosis of apparent emergency situations. A large portion of the book is devoted to chemical poisons in the alphabetic P section. The last section deals with administrative, clerical and medicolegal principles, including Blue Cross coverage, emergency records, treatment permits, legal responsibility and reportable diseases defined by most state health departments.

It appears that the book will appeal principally to physicians engaged in industrial medicine, but will have limited appeal to those in private or hospital practice. —EDWARD C KENNEY Capt (MC) USN

SURGICAL TREATMENT OF CANCER OF THE CERVIX edited by *Joe V Meigs M D* 462 pages illustrated Grune & Stratton Inc New York N Y 1954 Price \$12

This excellent volume, edited by an authority on the subject, presents all the known methods of surgical approach in the treatment of cancer of the cervix. It will serve as a valuable text for all who are interested in treatment of cervical cancer.

The views of the editor, based on 35 years of experience with the disease, are expressed in a highly informative and easily readable manner. The roles of surgery and radiation are discussed as to indication and relative merit. Emphasis is placed on the importance of chemotherapy and antibiotics and the need for painstaking care of

the patient before during and after surgery The prevention and management of complications that may occur in radical surgery on the female pelvis also are discussed

This book consists of 13 chapters three of which are devoted to an excellent description of the anatomy of the pelvis with illustrations and discussions of the importance of the lymph structures and blood vessels in radical surgery The remaining 10 chapters contain brief but very interesting editorial comments by the editor and by his distinguished contributors on the various methods of surgical approach These methods and technics are thoroughly discussed and beautifully illustrated Included are surgical procedures for carcinoma in-situ and for abdominal and vaginal radical hysterectomy Total exenteration of the pelvic organs and the fulguration treatment of recurrent cancer of the cervix are discussed in detail

I consider this book with its complete bibliography a masterful treatise on cancer of the cervix and recommend it as an essential addition to every medical library

—L. MARSHALL HARRIS C pt. (MC) USN

DISEASES OF WOMEN by Robert J. McCall, M.D. 10th ed. 935 p. g. with 990 ill. tr. 1 cl. d. g. 41 in. c. l. Th. C. V. M. by Co. St. Lou. M. 1933 P. \$18.50

This gynecologic text has remained one of the standard references since 1907 The tenth edition incorporates many improvements over previous ones The liberal use of colored diagrams and photographs together with many black and white pictures adds greatly to its attractiveness

While many of the chapters remain essentially the same there are several improvements The chapter on anatomy and physiology incorporates the newer concepts of oogenesis and the development of the various ovarian structures The section on endocrinology has been rewritten and brought up to date in the light of present knowledge The psychosomatic aspects of gynecologic problems have been enlarged with a detailed discussion of the physical and psychic changes occurring during the formative years of puberty and adolescence Much new material has also been added on vaginal smears pregnancy tests culdoscopy culdocentesis and endocrine therapy In this day of argument over surgery versus radiation therapy the new section on radiation therapy is most timely

As with previous editions this book is for the most part clearly and concisely presented It remains one of the standard textbooks in the field of gynecology and is highly recommended for students general practitioners or specialists as a sound conservative reference

—GEORGE C. CALDERWOOD Comdr (MC) USN

THE NEUROANATOMICAL BASIS FOR CLINICAL NEUROLOGY, by Talmage L. Peele M.D. 564 pages illustrated McGraw Hill Book Co. Inc. New York N.Y. 1954 Price \$12.50

It is increasingly necessary to include in neuroanatomic textbooks more detailed discussions of physiologic function in order to adequately correlate and integrate anatomic structure. This author has gone even further in writing a well balanced text from the standpoint of neuroanatomy, neurophysiology and clinical neurology. Each part of the nervous system is visualized in its functional integrity within the whole. The style is lucid and most pleasing and each chapter is tersely but adequately summarized. Throughout the book the more recent advances along neurologic experimental lines are presented in sufficient detail to allow for proper emphasis and to permit understanding on the part of the reader. The annotated data, both physiologic and anatomic, are meticulously presented. Function, normal and deranged, is emphasized from the outset and in more detail than in the usual neuroanatomic text. While some might criticize the details presented in the text and its length, particularly for use as an introductory text, nevertheless teaching experience in neuroanatomy has proved that there are all gradations of students and the more advanced and more intelligent demand the answers to many questions which can only be conveniently furnished by sufficient detail. Otherwise neuroanatomy becomes a memorized proposition.

The text is as up to date as is possible in this rapidly changing field. A certain number of experimental arguments and conflicting opinions are presented, challenging the student to make up his own mind. The illustrations have been selected from many sources and are among the very best and well picture the written material. The split page format is employed. Bold black type is used to emphasize key words which make for ready reference. There is a bibliography of 870 titles and the index is adequate.

The organization and plan of approach in this text is the best that has come to the attention of this reviewer. Possibly the text might best serve the advanced student or the exceptional beginner. It should be read by every serious student of neuroanatomy and by those practicing neurologists who desire to keep abreast of current functional and neuroanatomic developments. Further, it should prove an excellent review for the neurologist who is preparing for the American Board examinations in neurology and it is a must for those interested in or engaged in the field of neurology. The author is a competent teacher of neuroanatomy as well as a clinician and the material was favorably reviewed by competent authority prior to publication. There is little this reviewer can add except the highest praise.

—RICHARD R. CAMERON Lt. Col. MC USA

TOOTH FORM DRAWING AND CARVING by Russell C. White, D.D.S.
2d edition 106 pages illustrated by W. B. Saunders Co. Philadelphia
1954

For its intended use by the dental ancillaries this easy-to-read and understandable manual meets the author's objective and covers the subject matter adequately. For the associated groups especially laboratory technicians perhaps additional emphasis could have been placed on why tooth contours, grooves, ridges and other anatomic features are so important to restore normal function. More discussion of the anomalies of crowns and roots found in natural dentition would prepare the ancillary groups more adequately for their part in the overall dental health picture. Establishing the concept of the third dimension by carving cannot be overemphasized for the dental student and associated groups. The emphasis placed on this in the manual is superb.

The organization, format and illustrations are excellent. The style of the manual is easy to follow and understand and it is an excellent text for the dental student and associated groups in the study of dental anatomy.—FRANCIS E. CUMMINGS, C. L., USAF (DC)

RETROPUBIC PROSTATECTOMY by Frank A. Bost, M.D. Original
Drawing by William P. Didusch 227 pages Charles C. Thomas Pub-
lisher Springfield, Ill. 1954 Price \$11

This monograph reviews the development of retropubic prostatectomy and appraises the results of this latest addition to the urologist's approach to the prostate. The author recommends limiting the applicability of this operation to benign prostatic enlargement.

Following a description of the anatomy, embryology and blood supply of the prostate, the author presents an excellent discussion on his subject beautifully illustrated with color plates. His technique of the surgical procedure is described in great detail and graphically portrayed with 44 incomparable illustrations by William P. Didusch. He not only describes variations in technique but offers valid arguments for each. His eccentric bag catheter which may offer some advantages is unique.

Both the preoperative and postoperative management of patients as well as the evaluation of associated disease, fluid and electrolyte balance, care of the catheter and treatment of complications are discussed in detail except that mention of postoperative bladder spasm for some reason is omitted. A complete chapter is devoted to osteitis pubis, the contention being that the condition is no more prevalent in this operation than in other prostatic surgical procedures.

Finally, the author thoroughly evaluates the results of his first 100 patients treated by this method. His mortality rate of seven percent seems unduly high but the cases were unselected and 75 were service patients. A complete bibliography is appended to each chapter.

This book is a welcome addition to the urologist's library

—JACK W. SCHWARTZ Col MC USA

DONOVANOSIS by R V Rajam, M S F R C P and P N Rangiah M D
World Health Organization Monograph Series No 24 72 pages illus
trated Columbia University Press New York N Y Distributor 1954
Price \$1 50

The disease discussed in this monograph is better known in this country as granuloma inguinale. The authors are associated with Madras Medical College in India as was Major Charles Donovan who discovered and described the causative organism of the disease 48 years ago. This no doubt was a major factor in the selection of the name "Donovanosis" for which the authors make an excellent case.

Recommended particularly to students of venereal disease, the work is concise and complete in all respects from the nomenclature and history of the disease through the pathology and treatment. The compiled information came from the authors' own work and from a total of 82 references, many of which are from the American literature. The organization of the material is excellent and logical with a minimum of extraneous facts and discussion.

Donovanosis is a disease which is seen sporadically in military practice and is not uncommonly misdiagnosed. Since it is a chronic, progressive, destructive disease that may be incurable in advanced cases, some knowledge of it is essential to the military physician.

This monograph is recommended as the most complete and timely source of information on the disease that is available at this writing.

—SKDNOR T WITHERS Lt (MC) USN

THE STATUS OF MULTIPLE SCLEROSIS Editor Roy Waldo Miner. Originally published in Annals of the New York Academy of Sciences. Volume 58. Art 5. pages 541-720. July 28, 1954. Illustrated. The New York Academy of Sciences. New York, N. Y. 1954. Price \$4.50.

This book is a compilation of papers presented at a conference on multiple sclerosis held by the Section of Biology of the New York Academy of Sciences and the National Multiple Sclerosis Society in April 1953.

The papers are all well presented and in some of them constructive criticism is included in the discussion. Although it is obvious that very little is known even now concerning this disease, this is an excellent attempt to bring together in one book not only all of the current work in progress but also the present status of all methods of treatment. Although no treatment has yet been successful in halting the progress of the disease, various factors have prolonged the life of patients. These include an understanding of the basic metabolism of a patient, proper nursing care, and an appreciation of psychologic mechanisms. The use of drugs including histamine, ACTH, cortisone

adenylic acid and sodium succinate is ably discussed and their limited value is stressed

This book will be of particular value to those practitioners who are faced with the problem of treating and following cases of multiple sclerosis as well as to research workers in the field

—HENRY S COLONY *Comdr (MC) USN*

DOCTORS IN THE SKY The Story of the Aero Medical Association by Robert J. B. J. d. M. D. Colonel M. D. I. Corp. United States Air Force
326 page illustrated Chapter C. Thomas Publisher Springfield Ill.
1955 Price \$8.75

Aviation medicine can be said to have reached maturity. An appreciation of this growth can best be achieved by a review of its origin, growth, and development so admirably revealed in this narrative history, the story of the Aero Medical Association in its first 25 years.

The 12 chapters are replete with details which give the reader a deep appreciation of the early struggles and later accomplishments of aero-physicians. Among the interesting subjects covered are the growth of the specialty of aviation medicine, the role of the physician in air commerce, flight surgeons in military and civilian life, and the rise of aviation medicine journalism. Particularly effective are descriptions of the many prominent and pioneering individuals who have been intimately associated with the growth of aviation medicine in this country.

There is a valuable appendix including lists of past officers, honorary members and fellows, physicians certified in this specialty, leaders in the field, and a selected bibliography. There are more than 50 photographs which add to the readability of this timely book. Notable also are the foreword by Dr. John F. Fulton of Yale, an index of names as well as subjects, and particularly a detailed account of the cardinal role of Dr. Louis H. Bauer in the creation and growth of aviation medicine.

The author, who is also editor of the *Journal of Aviation Medicine*, is to be commended on successfully accomplishing a difficult but important task. The vital role of aviation medicine can better be appreciated.

—DAN C. OGLE, *Maj Gen, USAF (MC)*

ATTENTION ALL AUTHORS

The checking and correcting of references, it may be said here and emphatically—one of the necessary drudgeries of documentation—is dreary painstaking work. If editors were permitted only one tip to authors it might be that they should restrict the number of references appended to their papers to those that are important and that they should be correct.

—*New England Journal of Medicine*
p 114 J 20 1955

New Books Received

Books received by the U S Armed Forces Medical Journal are acknowledged in this department. Those of greatest interest will be selected for review in a later issue.

THE HUMAN MACHINE Biological Science for the Armed Services by *Charles W Shilling* Captain Medical Corp United States Navy 292 pages illustrated United States Naval Institute Annapolis Md 1955 Price \$5

EARLY CARE OF ACUTE SOFT TISSUE INJURIES Committee on Trauma 192 pages American College of Surgeons Chicago Ill 1954

SEGMENTAL ANATOMY OF THE LUNGS A Study of the Patterns of the Segmental Bronchi and Related Pulmonary Vessels by *Edward A Boyden*, Ph D (Med Sc) Professor Emeritus of Anatomy The Medical School University of Minnesota Minneapolis Minn 276 pages illustrated The Blakiston Division McGraw-Hill Book Co Inc New York N Y 1955 Price \$15

An Outline of THE TREATMENT OF FRACTURES by the Committee on Trauma 5th edition revised and amplified 63 pages illustrated American College of Surgeons Chicago Ill 1954

THE YEAR BOOK OF THE EYE EAR NOSE AND THROAT (1954 1955 Year Book Series) The Eye edited by *Derrick Vail* M D D Oph (Dxon) F A C S F R C S (Hon.) Professor and Director Department of Ophthalmology Northwestern University Medical School Attending Ophthalmologist Passavant Memorial Hospital Past Attending Ophthalmologist Cook County Hospital The Ear Nose and Throat edited by *John R Lindsay* M D Professor of Otolaryngology The University of Chicago The School of Medicine 461 pages illustrated The Year Book Publishers Inc Chicago Ill 1955 Price \$6

THE HUMAN MASTICATORY APPARATUS An Introduction to Dental Anthropology by *Meyer Klatsky* D D S Director Dental Division Medical Department of the Workmen's Circle New York N Y and *Robert L Fisher* D D S Department of Pedodontics School of Dental and Oral Surgery of the Faculty of Medicine Columbia University New York N Y Dental and Oral Surgery Staff for Orthodontics the Mount Sinai Hospital New York N Y Foreword by *Wilton Marion Krogman*, Ph B A M Ph D Professor of Physical Anthropology Graduate School of Medicine University of Pennsylvania Philadelphia Pa Introduction by *Leuman M Waugh* D D S D D C Formerly Professor of Dentistry and Director of the Department of Orthodontics School of Dental and Oral Surgery Columbia University New York N Y 246 pages illustrated Dental Items of Interest Publishing Co Inc Brooklyn N Y 1953

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES Volume 59 Art 3 The Relation of Immunology to Tissue Homotransplantation by *J M Converse* and 34 others edited by *Roy Baldo Mene* Pages 277 466 illustrated The New York Academy of Sciences New York N Y Jan 24 1955 Price \$4

U S ARMY IN WORLD WAR II Sp e l Stud es THE WOMEN S ARMY CORPS
by M it e E T dw ll Dific of th Ch f ol Mil ta y ll to ry D p r
me t of the Army W h gto D C 1954 841 p g illu trated U S
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ANNALS OF THE NEW YDRK ACADEMY OF SCIENCES, Volum 59 Art 4
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THE DEVELOPMENT OF MEDICAL BIBLIDGRAPHY by E t ll Brodm n
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DENTISTRY IN PUBLIC HEALTH edst d by W ll J P l t n, B S D D S
M S, P H De tal Dir ctor Ch f D l D tal R ur
Bur of M d c l Se U d Stat P bl ll lth S r c
W h gto D C Ja b M W n, D D S M S P ll Ch f D tal
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llustr t d W B S nd C Phil d lph P 1955 Pri e \$6 50

THE YEAR BDDK OF URDLOGY (1954-1955 Y B k Se) d d by
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P bl sh lnc Ch g Ill 1955 P \$6

LABORATORY MANUAL OF BIOCHEMISTRY by B j m H u E t
Bo k Abr b m M Gilbert C H St nd H rry W g b Ch m
try D pa tment C ty Coll g ol N w Yo k 4th d tu on 164 p g l
l tr t d W B S d Co Phil d lph P 1955 P c \$3

THE VERTEBRATE BODY by Alf d Sb ruood R m Al de Aga z
P f t of Zo l gy d Director M m l C mpar t ve Zo l gy
H rva d U s ty 644 p g ll tr t d 2d d t W B S a d
Co Phil d lph P 1955 P \$7

A TEXTBOOK OF PHYSIOLOGY d ted by J b F Fult n, M D S l g
Pt f or f th ll to y l Med c Y le Un ty School of M d
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\$13 50

Chr toph MINOR SURGERY edst d by Alf O b M D F A C S
William H d P l or f Surg y d Ch arm f th D pa t m t
f Surgery Tula U ty l l ana S hool f Med d
Mich l E D B k y M D F A C S P f or of Surgery d
Chairman f th De pa tment I S ge y B yl U ty C ll g f
M d c 7h d u n 547 p g ll tr t d W B S und C
Ph lad lph P 1955 P e \$9

CURRENT THERAPY 1955 Latest Approved Methods of Treatment for the Practicing Physician edited by *Howard F Conn M D* with 12 consulting editors 692 pages W B Saunders Co Philadelphia Pa 1955 Price \$11

INTRODUCTION TO RECREATION EDUCATION by *John H Jenny Ed D* Associate Professor and Co ordinator of the Recreation Curricula Temple University Philadelphia Pa 310 pages illustrated W B Saunders Co Philadelphia Pa 1955

A COMPREHENSIVE REVIEW OF DENTISTRY For Use in Preparing for State Board Licensing Examinations edited by *Vincent R Trapozzano D D S F A D P* Formerly Professor of Prosthetic Dentistry Head of the Prosthetic Department and Director of Postgraduate Division Thomas W Evans Museum and Dental Institute the School of Dentistry University of Pennsylvania Professor of Prosthetic Dentistry Graduate School of Medicine University of Pennsylvania with the collaboration of 24 contributors 2d edition 665 pages W B Saunders Co Philadelphia Pa 1955

THE JOINTS OF THE EXTREMITIES A Radiographic Study Notes on Non routine Methods Nonroutine Ideas and Less Common Pathology by *Raymond W Lewis M D* Formerly Director Department of Radiology Consultant in Roentgenology The Hospital for Special Surgery New York N Y 108 pages illustrated Charles C Thomas Publisher Springfield Ill 1955 Price \$8 50

NEUROLOGY Volumes I II and III by *S A Kinnier Wilson, M A M D D Sc (Edin) F R C P* Formerly Physician Naamal Hospital Queen Square Senior Neurologist King's College Hospital Consulting Neurologist Metropolitan Asylums Board (L C C) *Officier de L Instruction Publique R F* Honorary Fellow Royal Academy of Medicine Turin Honorary Member Royal Academy of Medicine Belgium National Academy of Medicine Rio de Janeiro Neurological Societies of Italy Poland Denmark Holland Brazil Paris Vienna New York and Philadelphia the Japanese Association of Psychiatry and Neurology the Society of German Neurologists the Medical Society of Copenhagen and the American Neurological Association Corresponding Member Neurological Society of Warsaw Edited by *A Ninian Bruce F R C P (Edin) D Sc (Edin) M D F R S (Edin) Lt Col R A M C* Consulting Physician Bangour Mental Hospital and St Andrew's Hospital Hawick Consulting Neurologist Jordanburn Nerve Hospital Edinburgh Lecturer in Neurology University of Edinburgh Member Association of British Neurologists Honorary Member American Psychiatric Association Membre Correspondant Etranger Societe de Neurologie de Paris Membre Associe Etranger Societe Medico-Psychologique Paris 2d edition 2 060 pages 279 illustrations The Williams and Wilkins Co Baltimore Md 1955 Price \$37 50 per set of three volumes

ANTIMICROBIAL THERAPY IN MEDICAL PRACTICE by *Harrison F Flippin M D, F A C P* Associate Professor of Clinical Microbiology The Graduate School of Medicine The University of Pennsylvania Visiting Physician Philadelphia General Hospital (Blockley Division) Chief Section of Infectious Diseases Department of Medicine The School of Medicine The University of Pennsylvania and *George M Eisenberg D Sc* Associate in Medicine The Graduate School of Medicine The University of Pennsylvania Chief Division of Bacteriology and Immunology Department of Laboratories Philadelphia General Hospital (Blockley Division) Philadelphia Pa 304 pages 11 tables and therapeutic index F A Davis Co Philadelphia Pa 1955 Price \$5

INSTRUCTIONS FOR AUTHORS

The *United States Armed Forces Medical Journal* is devoted to the publication of original investigations, observations and clinical experiences of interest to personnel of the medical services of the three military departments. Contributors who are affiliated with one of the military services in a commissioned, enlisted or civilian capacity should forward manuscripts to the Surgeon General of the United States Army, Navy or Air Force, Washington 25, D. C., in accordance with existing regulations. The covering letter should state that the author desires the manuscript to be given consideration for publication in the *Journal*. Other authors should send manuscripts directly to the editor. Accepted manuscripts become the property of the Armed Forces Medical Publication Agency and will not be returned.

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An original typewritten copy of each manuscript with wide margin on unruled paper, size 8 by 10½ inches, must be submitted. Carbon copies are not acceptable. All written matter including references must be double spaced. Articles are accepted with the understanding that they are submitted solely to this *Journal* and that they will not be reprinted without the permission of the editor. A brief, factual summary, which is complete in itself, should conclude each paper. The editors reserve the privilege of editorial modification. The senior author will be furnished with a proof of his article prior to publication and with a generous number of tear sheets without cost in lieu of reprints. Authors are responsible for the accuracy of their statements.

REFERENCES

References to published literature should be listed at the end of the article in the numerical order in which they are cited in the author's text. Care and accuracy in their preparation will expedite publication of the article. Following are correct examples of references:

Fleming, A., Young, M. Y., Suchet, J. and Rowe, A. J. E. Penicillin content of blood serum after various doses of penicillin by various routes. *Lancet* 2, 621-624, Nov. 11, 1944.

Cabot, R. C. Pernicious and secondary anemia, chlorosis and leukemia. In Oler, W. (editor), *Modern Medicine*, 3d edition, Lea & Febiger, Philadelphia, Pa., 1927, Vol. 5, pp. 33-100.

FIGURES AND TABLES

Photographs should be black and white, unmounted and untrimmed, glossy prints, preferably not larger than 8 by 10 inches in size. If the identity of a patient is recognizable in a photograph, it must be accompanied by the patient's signed statement authorizing its publication. The magnification of photomicrographs must be stated. No marks, writing or typing should be made on the face or back of photographs. The author's name and an identifying legend may be affixed to the back of each print with paste or glue, paper clips, pins and staples should not be used. Special care should be given to the preparation of graphs and tables. They should be drawn or printed in black ink on white paper and must be accompanied by an explanatory legend.

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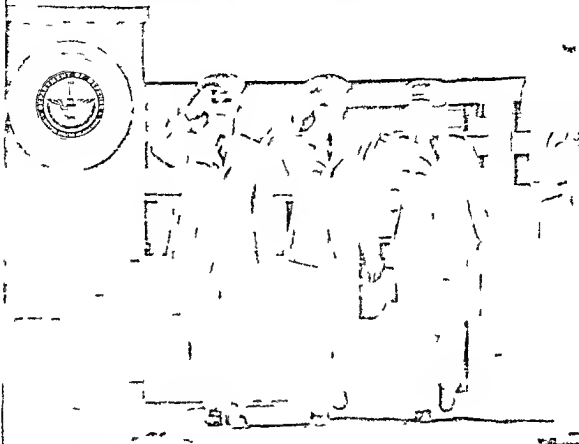
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UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON 1955

Monthly Message

SPIT

I invite your attention to an excellent article by Dr. Frank L. Melenoy entitled "The Past Fifty Years in the Management of Surgical Infections" in *Surgery Gynecology and Obstetrics* 100 1 January 1955. It is filled with interest, some humor and much instruction as it covers the history of the past half century. In it he quotes an article by Dr. Willis G. MacDonald which appeared in 1906 "Practical Bacteriological Studies in the Surgical Clinic" in which Dr. MacDonald points out the dangers in the spread of surgical infections by the spray from the mouth. I remember vividly in my own undergraduate days the attitude of the late Dr. Harvey Cushing toward any of his assistants who coughed or sneezed or even laughed heartily while operating. They were admonished in no uncertain terms to step away from the table and turn their head and if they had a cold they were not allowed at the operating table.

In World War I the same danger of spread of infection from mouth organisms and carriers of streptococci in the throat and nose was noted both in the British and American armies.

Unfortunately, in recent years, particularly since World War II and the advent of the antibiotics, there has been increasing carelessness on the part of the operating surgeons and their assistants, so that now it is not uncommon to see them cough directly into the wounds without a thought of stepping back or turning their heads. Apparently they rest safe in the arms of a false belief of a huge umbrella of protection by the antibiotics, forgetting the very essentials of the principles of surgery and the spread of infection. I was brought up in the era of World War I and participated in the examinations of the throat and pharynx of many hundreds of troops so as to weed out the carriers of meningococci and hemolytic streptococci and ever since then I have been acutely conscious of those dangers. A single mask does not afford complete protection to the wound from the nose and throat of the operators, but even if it did, it is but common courtesy to turn one's head away when coughing or sneezing; the mask should cover both *mouth and nose*. And now from the purely practical standpoint this becomes all the more important in view of the resistance of many organisms to antibiotics.

Frank B. Berry

FRANK B. BERRY, M.D.
Assistant Secretary of Defense
(Health and Medical)

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Foreword

The United States Armed Forces Medical Journal is the medium for the dissemination of information of administrative and professional interest to all medical personnel of the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surge General of the General Service Medical Staff of the Department of Defense are the principal sponsors of the Journal. The Surgeon General of the United States Army, the Surgeon General of the United States Navy, and the Surgeon General of the United States Air Force are the principal sponsors of the Journal.

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COMPARATIVE METHODS OF ARTIFICIAL RESPIRATION

Study of Living and Dead Subjects
With and Without Gas Mask

ARCHER S. GORDON, M.D., Ph.D.

CHARLES W. FRYE, M.S.

ROBERT D. MILLER, M.S.

GORDON M. WYANT, M.D.

DURING the past several years improved manual methods of artificial respiration have been adopted by the Armed Forces, American Medical Association, American Red Cross, U. S. Public Health Service, Federal Civil Defense Administration, and other national and federal groups concerned with resuscitation. This action followed an intensive research program co-ordinated under the Department of Defense by the Chemical Corps Medical Laboratories.¹

Four research groups carried out studies on warm, nonrigid corpses;² normal adults curarized, anesthetized to apnea,³⁻⁶ apneic anesthetized patients prior to surgical procedures,⁷ patients who were apneic due to intracranial lesions or other pathologic conditions,⁸ and normal trained persons.⁹ All of these investigations were corroboratory in revealing that methods which produce both active inspiration and active expiration—so-called “push pull” methods—result in more than twice as much pulmonary ventilation as methods which only produce active expiration (Schafer prone pressure) or active inspiration (Emerson hip lift). Three of the push pull methods were found to be almost equally effective. These were the back pressure arm lift (modified Holger Nielsen), hip lift back pressure (Schafer-Emerson type) and arm lift chest pressure (Silvester). Further tests indi-

¹ From the Department of Clinical Science, University of Illinois College of Medicine, Chicago, Ill.

This study was supported by grant from the Chemical Corps Medical Laboratories, Army Chemical Center, Edgewood, Md.

cated that all of the push pull methods are capable of maintaining arterial oxygen saturation at near normal levels ¹⁰

The hip lift back pressure method is difficult to perform for long periods of time by a single operator ¹⁻⁴ and the Silvester method results in frequent obstruction of the airway because of the supine position ¹ The back pressure arm lift method therefore, was selected as best for general use The hip lift back pressure and Silvester methods should be applied when specific conditions indicate their use or prevent performance of the back pressure arm lift.

Anticholinesterase (nerve gas) poisoning requires prompt treatment of the patient with injections of atropine sulfate, and artificial respiration ¹¹ In field situations the manual methods will have to be used initially until mechanical resuscitation equipment and oxygen become available This raises the question will push pull manual methods satisfactorily ventilate casualties wearing gas masks in a contaminated atmosphere? The current study was designed to resolve that question

METHODS

Manual methods of artificial respiration were studied on (a) normal adults who were curarized anesthetized to total apnea and (b) warm, nonrigid corpses Determinations were made first without and then with the subjects wearing a standard M 9 gas mask equipped with an M 11 cannister

Studies on Normal Adults Seven normal adult male students were studied during total apnea induced with mixtures of curare and anesthesia Their ages ranged from 21 to 28 years and their weights from 135 to 205 pounds Normal resting tidal volume and vital capacity were determined before and after the application of the standard Army gas mask and cannister Each subject was then anesthetized and curarized by the method previously described by this group A cuffed endotracheal tube was inserted into the airway and the subjects were maintained in the apneic state by controlled breathing and further anesthetic agents The subject's respiration was at all times under the control of either the anesthetist or the operator performing artificial respiration

Each of the three push pull manual methods was then applied The prone and supine Eve rocking methods were also evaluated The gas mask and cannister were then placed on the subject and the methods were repeated In each series the sequence of application of the methods was rotated

Ventilation was measured by means of a carefully balanced respirometer. During performance of the methods on subjects

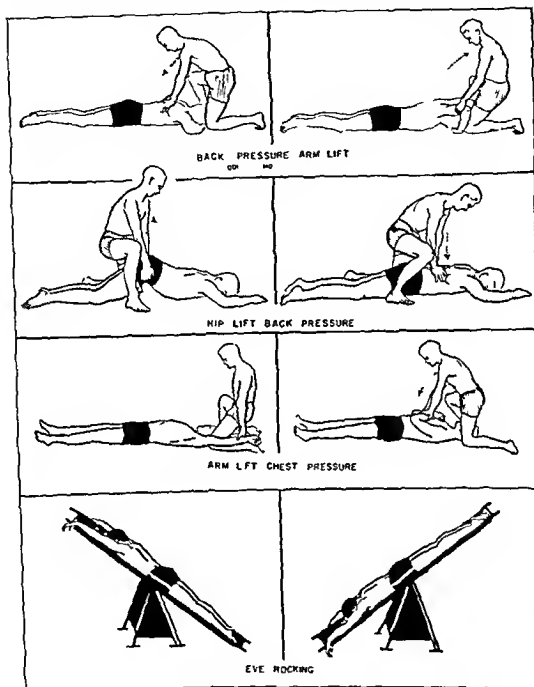


Figure 1 Techniques of the four methods of artificial respiration used on normal adults and on warm, nonrigid corpses

wearing the gas mask, intramask pressure was recorded by means of electromanometer transducers

Studies on Corpses Similar measurements were made on 13 warm, nonrigid corpses immediately after death and before the

TABLE I P. Impurity and lat on. th. var ou method / n / c l p e r t o n o c u r a d a n e t h e t d n o r m a l a d u l t

S	V	M h o d	V 1 (P y 1)							M
			S b j							
			1	2	3	4	5	6	7	
C	N a m k	T d l l m	452	473	497	745	414	559	619	537
		V l p t y	440	5382	3788	4388	4533	4512	3498	4362
		T d l l m	476	611	645	783	481	597	840	633
A b t d d w r d p	N a m k	H p l f b k g e w (Sch f Em n lvy)	1366	1470	1035	1283	1028	1511	1035	1249
		A r m l f h p w (S l l t)					1254	1304	952	110
		B k p w a r m l f t (H l g N l o)	1325	1573	952	911	892	1416	795	1123
		E k s	453	911	414	414	559	787	476	574
							352	487	331	393

TABLE 1 Pulmonary ventilation with various methods of artificial respiration on curarized-anesthetized normal adults—Continued

Stat	Variation	M th d	Ventilation (cc per cycl)							Mean
			Subjects							
			1	2	3	4	5	6	7	
Anesthesia and curarized to apnea —continued	McG & Smith's apparatus with Miller cannister	11 p-lift back pressure	662	849	890	952	1 138	1 167	1 159	974
		Arm-lift chest-press swe					1 118	890	828	945
		Back pressure m lift	559	455	890	890	1 304	882	869	836
	Evening	Pron	290	911	455	579	393	393	646	524
		Supine					207	248	559	338

TABLE 3. Vital signs, methods of vital signs

Method	Vital signs (c)				
	Systemic blood pressure	Heart rate	Respiratory rate	Temperature	Weight
Methadone	Mean	124	974	545	510
	Range	(1028-1511)	(662-1167)	(124-911)	(75-890)
Arm lift	Mean	1170	945	512	480
	Range	(952-1301)	(890-1118)	(91-1014)	(54-994)
Dialysis	Mean	1123	836	442	419
	Range	(892-1573)	(455-1304)	(124-1027)	(41-799)

TABLE 3 Ventilation obtained with various methods of artificial respiration—Continued

Method		Ventilation (cc)				
		Seven anesthetized curarized normal adults		Eight warm nonrigid corpses		
		Endotracheal tube		Wearing M 9 gas mask		
		No gas mask	M 9 gas mask	Endotracheal tube	No endotracheal tube	
Eye rocking	Prone	Mean	574	524	-	213
		Range	(414 911)	(393 646)	-	(40 509)
	Supine	Mean	393	338	-	160
		Range	(331 497)	(207 559)	-	(0 186)

Ventilation in only three of eight corpses

Studies on Corpses The ventilatory values obtained on the corpses were about one half of those obtained with the curarized subjects however the relative values between the various methods are the same This same relationship between data on corpses and on curarized subjects was noted in previous tests²⁻⁴ The push pull techniques gave the same relative results and all were more than twice as efficient as the Eve methods When an endotracheal tube was not used the pulmonary ventilation was somewhat reduced but all methods except the supine Eve method resulted in ventilation in all cases With the supine Eve method the mean tidal volume was only 160 cc and in five of the eight corpses no ventilation was obtained

DISCUSSION

In this series of tests application of the various methods of artificial respiration without the gas mask produced results which duplicate those obtained in previous studies When the gas mask and cannister were used the push pull methods retained their effectiveness In curarized subjects pulmonary ventilation with these methods was one and one half times the resting tidal volume despite the resistance offered by the mask and cannister These findings held for individual subjects as well as for the over all group In corpses the values were almost the same as obtained in previous studies, and about one half as much as obtained in normal curarized subjects Although the absolute values are reduced the relative values between the methods are essentially the same With all of the push pull methods use of the gas mask without an endotracheal tube resulted in ventilation in all cases with only a slight reduction in volume

The prone Eve method produced only one half as much ventilation as the manual push pull techniques and only one third as much with the supine position This held for both the curarized subjects and the corpses without an endotracheal tube Only three of eight corpses were ventilated with the Eve supine method

These findings are related to the airway pressure differentials resulting with performance of the various methods The hip-lift back pressure method creates the greatest inspiratory intramask pressure and results in the most ventilation All of the push pull methods exceeded the Eve methods as regards intramask pressure differentials and produced greater ventilation Because airway resistance and cycling rate were constant for all methods increased intramask pressure differentials would result in increased air flow rate Cycling rate being the same for all methods an increased flow rate results in an increased vol

ume per cycle. This accounts for the greatest ventilation with the hip lift back pressure method and greater ventilation with the other push pull methods than with the Eve methods.

With a clear airway, the back pressure arm lift method is adequate for overcoming the resistance of a standard gas mask with cannister and for producing artificial ventilation of a casualty wearing them in a contaminated atmosphere. Increased airway resistance may result from respiratory secretions and/or bronchoconstriction following anticholinesterase poisoning. The hip-lift back pressure method offers the best possibility of overcoming this resistance because of the greater intramask pressure differential it creates. It may be necessary to use this method until airway resistance has been relieved by inspiration, postural drainage, and administration of atropine sulfate. Then the back pressure arm lift method may be used because it is easier to perform for a prolonged period of time.

Recent investigations^{17, 18} have indicated that mouth to mouth insufflations (or mask to-mask insufflations in a contaminated atmosphere) can be performed for long periods of time, and will maintain adequate ventilation and normal blood gas tensions. In victims with increased airway resistance, the positive inflating force of the operator's expiration may be more effective than the manual methods for overcoming resistance.

Although the prone Eve method provides less ventilation and requires the use of equipment (either provided or improvised), it is suitable if it becomes necessary for a few persons to resuscitate many victims simultaneously. By lashing together several standard Army stretchers, one person can effectively rock and ventilate several persons at one time.

Maintenance of a clear airway is essential with all of these methods.

SUMMARY

Tests on totally apneic, anesthetized curarized normal adults and warm, nonrigid corpses indicate that all push pull manual methods of artificial respiration are effective for ventilating casualties wearing a standard M9 gas mask equipped with an M11 cannister.

The hip-lift back pressure method creates the greatest intramask pressure differential and should be most effective when there is increased airway resistance, such as occurs with bronchoconstriction or excessive airway secretions resulting from anticholinesterase poisoning. If the airway is clear, the back pressure arm lift method provides almost as much ventilation and is easier to perform.

The Silvester method (arm lift chest pressure) produces as much ventilation and should be used when it is necessary to keep the patient in the supine position

Mouth to-mouth (or mask to-mask) insufflations may be effective in ventilating casualties with increased airway resistance

The prone Eve method gives about one half as much ventilation as do the push pull manual methods. In addition it requires a rocker either provided or improvised. For resuscitation of many persons by a few operators it may be necessary to fasten together several stretchers for simultaneous rocking by a single operator

Maintenance of a clear airway is of paramount importance for adequate ventilation with any of these methods

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THE HAIR SHIRT

Physicians wear hair shirts. Perhaps no other group in our society is so self-critical. Physicians are constantly evaluating and re-evaluating their activities, searching for errors that may be corrected and for better ways of operation.

The hazard in this discipline of self-criticism is the hair shirt complex. This is a neurosis characterized by distorted perspective. The victim frets about what is wrong with medical education, forgetting what is right; he grows peevish over the inadequacies of medicine, losing sight of its amazing accomplishments; he rails against the trained incapacity of physicians, losing sight of the extraordinary competence of most. Rage at the occasional abortionist, dope peddler, chuseler, ghost surgeon, or rapist colors his view of the entire profession. His cries are heard in the marketplace. This disease is an occupational hazard in medicine. Teachers, medical writers, and frustrated idealists are especially susceptible. It is communicable. Its virulence is greatly increased by animal passage through free-lance magazine writers who spread a malignant variant among the literate. Large doses of medical history are curative, but the best treatment is preventive. For the malignant variant which afflicts people who have not been immunized by a formal medical education, prevention is the only practical control measure.

Prevention of the hair shirt neurosis does not involve the assumption that we are paragons in this best of all possible worlds. It does not involve elimination of the useful technique of self-criticism. It does not involve erecting barriers to legitimate medical news. Rather, it involves unemotional honesty to insure that our public utterances and writings are in accurate perspective. Let us discard the hair shirt.

—MILTON R. WEED, M.D.
in *Detroit Medical News*
p. 6 Mar 14 1955

IS KOREAN SERVICE A HEALTH HAZARD TO CIVILIAN COMMUNITIES?

MYRON G. RADKE *First Lieutenant, MSC, USA*

REGINALD C. THOMAS *Captain, MSC, USA*

JAMES F. MRACEK *Captain, MSC, USA*

CAPLYLE NIBLEY *Jr., Captain, MSC, USA*

ROLAND S. ARONSON *Lieutenant Colonel, LMC, USA*

ON NUMEROUS occasions the question has arisen as to whether or not United States military personnel serving in the Far Eastern theaters would likely become carriers of tropical diseases. It was found at the close of World War II that many returning soldiers had become infected with endoparasites. At the outbreak of the Korean conflict the controversy arose again concerning the possibility of troops returning from this area transmitting these parasitic diseases to the general American population. Craig¹ expressed the following opinion: "The return of these men undoubtedly will cause an increase in such infections in this country, and will render a prompt diagnosis imperative if we are to prevent their spread. This controversial question obviously requires much evidence to resolve it; therefore this study was conducted to give a better understanding of its potentialities.

In this survey a group of food handlers in the Third Army area, including both military personnel with and without Korean service and civilian personnel, was examined for intestinal parasites and enteric pathogenic bacteria. This study area seemed appropriate because in general the southeastern section of the United States has always been considered to have a higher incidence of these diseases due to these organisms. The problems prompting this survey were: (a) Are military personnel returning from Korea likely to show higher rates of infection than personnel without Korean service? (b) Is the incidence of infection higher in military than in civilian food handlers? and (c) Does a racial difference in the rate of infection exist?

MATERIALS AND METHODS

Fecal specimens from 4,438 persons (925 soldiers with Korean service, 2,799 without Korean service, and 714 civilians) were submitted to this laboratory from nine Army installations participating in the survey. According to the instructions given in the

From the Third Army Area Medical Laboratory, Fort Monmouth, New Jersey.

technical manual,² each specimen was divided and submitted in two sterile 22 ml screwtop bottles. One bottle, for bacteriologic examination, contained buffered glycerin saline solution, and the other bottle, for parasitologic examination contained 10 percent formaldehyde.

On receipt, each fecal suspension in buffered glycerin saline solution was inoculated on two eosin methylene blue agar plates, two salmonella shigella agar plates, and one selenite F broth tube. The following day the eosin methylene blue and the salmonella shigella agar plates were examined for typical enteric pathogenic colonies and the selenite-F enrichment broth was subcultured on two eosin methylene blue and two salmonella shigella agar plates. Suspected colonies were picked from all plates and inoculated on Kligler's iron agar. Biochemical studies and typing were performed when the reaction on Kligler's iron agar indicated the presence of a possible enteric pathogen. All plates were incubated for 48 hours before being discarded as negative for enteric pathogens.

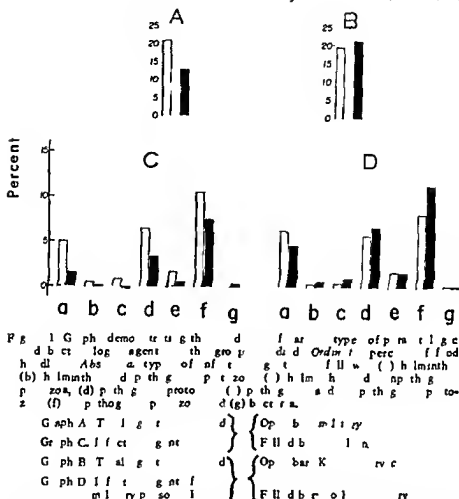
Specimens submitted for parasitologic investigation were examined by the direct smear and by the modified ether sedimentation technique (formalin ether technique) described by Ritchie.³ All parasitic agents found both pathogens and nonpathogens, were reported.

RESULTS

Of the 4,436 stool specimens examined, 859 harbored one or more parasitic and bacterial agents. A total of 655 stools had one or more types of protozoa (of which number 243 harbored a single pathogenic protozoan) and 146 stools had one or more types of helminths. In addition, 51 stools had both protozoa and helminths. Seven stools were positive for a single significant bacterial agent.

In figure 1, graph A compares the total agents recovered from both military and civilian personnel. The military personnel had a higher incidence of infection than did the civilian. Graph C illustrates the various types of infections and shows that the military personnel had a higher rate of parasitic infection but a lower incidence of bacterial infection. The differences in infective agents found between the Negro and the Caucasian races are represented in graphs E through H (fig 2). It may be noted that in all instances shown in these graphs, Caucasians had a higher incidence of infective agents than did Negroes. Graph H, however, shows that Negroes had a slightly higher percentage of nonpathogenic protozoa.

The total agents recovered from military personnel, illustrated in graph B, indicate that soldiers without Korean service had a



slightly higher percentage of positive stools than did those with Korean service. A breakdown of infective agents into groups graph D indicates that helminth infections were more prevalent in personnel returning from Korea.

DISCUSSION

In this survey a single stool specimen from each food handler was received and examined but if more than one specimen had been received and examined a higher percentage of agents would have been recovered.

Heare stated that a single fecal examination by the zinc sulfate flotation method revealed only 50 percent of the protozoan infections. Ritchie and others compared the formalin ether technique¹ with the zinc sulfate flotation method. The authors noted a marked superiority of the formalin ether technique over the zinc sulfate flotation method there being a higher percent of protozoan cysts, helminth eggs and larvae recovered by the former method.

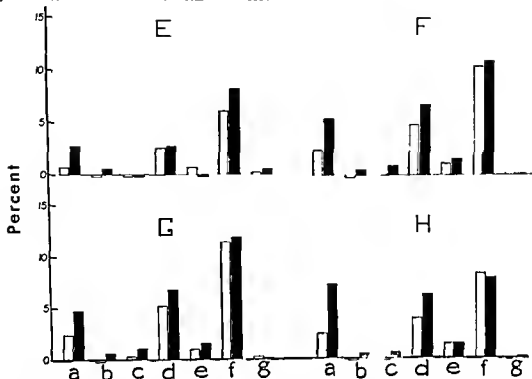


Figure 2. Graphs demonstrating the incidence of various types of parasitologic and bacteriologic agents in the groups studied. Ordinate and abscissa same as in figure 1. In figure 2 the open bars represent Negroes and the filled bars Caucasians.

Graph E: civilian personnel

Graph F: military personnel

Graph G: military personnel without Korean service

Graph H: military personnel with Korean service

The graphs in figures 1 and 2 corroborate information presented by Jacobs and associates⁷ who examined 4,000 stool specimens from military personnel native to the same section of the United States as the subjects of this study. Our survey also seems to substantiate Hunter's⁸ report in which he stated that parasitic and bacterial infections in military personnel returning from Korea should not constitute a health problem in the United States.

SUMMARY

Single stool specimens from a total of 4,438 military and civilian food handlers from the Third Army area were examined for parasites and enteric pathogenic bacteria. These examinations revealed that about 10 percent of those food handlers were harboring pathogenic agents.

It was noted that the Caucasian race had a higher rate of infection than the Negroid and, similarly, military food handlers appeared to harbor more agents than did civilians with like duties. Military personnel who had Korean service showed a slightly higher incidence of helminth infections, but the total of the agents recovered was higher from military personnel who had no Korean service.

Although this study has been restricted to an examination of 4 438 food handlers it is apparent that parasitic and bacterial infections in military personnel returning from Korea do not constitute a hazard to existing health conditions in the United States

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GOOD DOCTORING

More often than not we know in answering the sudden summons that we will be able to make little material contribution to the patient's well-being but we know that our presence will help. When death is inevitable the doctor doesn't waste his time when he stays by the patient as even if the patient be too ill to appreciate his presence his friends and relatives will derive great support. All these and many other less tangible elements in good doctoring cannot be taught as formal items in the syllabus but they can be inculcated by example. I think it is most important that clinical instruction should involve as long a period as possible during which the student is attached to a physician and at another time to a surgeon. The formal content of his instruction and work will be essentially scientific but in the day-to-day conduct of clinical practice and in the chief's attitude to patients there is much that the student can learn. He will naturally discover that the practice of medicine knows no hours and the doctor can expect rest and refreshment only when there is absolutely nothing further the patient needs for the time being.

—W MELVILLE ARNOTT

in Proc dng of th F t W ld

C f en e M d l Ed c t

O f d U et ty P ss 1954 p 283

SMALLPOX AMONG "VACCINATED" TROOPS

HARVEY H WALDO *Major MC USA*

ALL AMERICAN military personnel have been vaccinated against smallpox and are considered to possess some degree of immunity against the disease. It is disturbing, therefore, to find that some of these "immune" persons contract smallpox when exposed to the causative agent. Such outbreaks occurred in American military personnel during the occupation of Korea (where smallpox is endemic)¹ and Japan in 1946.^{2,3} When the international situation caused American troops to be returned to Korea in 1950, additional cases were reported.^{4,5}

During the first six months of 1953, six patients with smallpox were admitted to this hospital. Four of these patients were American soldiers. This report includes cases of smallpox in both successfully vaccinated persons and those never having had a successful vaccination. Only one case history will be given in detail. This concerns the first admission and the only fatality.

CASE REPORTS

Case 1 A 23 year old white man was admitted to this hospital 1 January 1953. He complained of the gradual onset during the preceding four days of headache, fever, chills, cough, sore throat, nausea, and vomiting. He had been given symptomatic therapy during this interval by his local dispensary. When his temperature rose and vomiting began, he was hospitalized.

On admission he appeared ill. His temperature was 102.4° F. His pharynx was deeply injected, his breath foul, and his neck supple. A roentgenogram of the chest revealed no abnormalities. The leukocyte count was 14,300 per cu. mm. The urinalysis findings were normal. The patient was treated empirically and given 180 mg. (300,000 units) of procaine penicillin twice daily.

The following morning he developed maculopapular lesions on the trunk. During the day scattered lesions appeared on the face, scalp, and extremities. The patient's temperature was 104° F. A tentative diagnosis of smallpox was considered because (1) the lesions did

From 21st Station Hospital, Pusan, Korea. Maj. Waldo is now assigned to U. S. Army Hospital, Fort Jay, N. Y.

not appear typical of chickenpox (2) the patient denied that he had ever been vaccinated (3) no vaccination scar could be found and (4) he had "taken in a little Korean beggar on 16 December because he looked cold and he had had the child sleep in the same room with him and some huddies for four days (this occurred the same day that the soldier arrived in Korea from Japan)

Procaine penicillin was increased to 600 mg (1 000 000 units) three times daily. Due to the persistent vomiting it was impossible to give antibiotics by mouth and fluids and vitamins had to be administered intravenously. The patient was placed in strict isolation.

During the next 48 hours all patients and duty and indigenous personnel were revaccinated regardless of the date of their last vaccination.

During the next three days the patient's temperature ranged between 102 and 104 F. The lesions became widespread over the entire body including the palms, soles and oral mucous membrane. The vesicles were uniform discrete umbilicated and from 0.5 to 1.0 cm in diameter. The sputum was blood tinged and the patient complained of a sore throat. It was difficult for him to speak or swallow.

For the next three days the patient's condition remained essentially unchanged. The leukocyte count was 18 100 per cu mm with 53 percent lymphocytes.

During the following three days he stated that he felt somewhat more comfortable. However edema of his face, neck and fingers developed. His temperature ranged between 99 and 102 F. He was still unable to take food and fluids orally.

On the ninth day of the rash (fig. 1) the patient's temperature rose to 103 F and he became more lethargic and drowsy. The following day he became more restless and mentally confused. He developed a crusting on the face, neck and scalp. His leukocyte count was 4 050 per cu mm with 43 percent lymphocytes. Hemoglobin was 12.5 grams per 100 ml.

During the eleventh day of the rash the patient's general condition appeared to be more grave. He was given 20 mg of corticotropin (ACTH) intramuscularly and another 20 mg intravenously slowly over a three-hour period. Purulent mucus began to accumulate in his respiratory tree and he died that evening very suddenly while the nurse was straightening his sheets. No autopsy was performed.

This soldier had apparently not been vaccinated against smallpox. He denied any immunizations prior to entrance into the Army 11 months before. No vaccination scar could be found on this man. Although his company immunization record indicated a vaccinia reaction on 22 July 1952 he denied repeatedly that he had ever had a vaccination.

even after the procedure had been described to him in detail. He arrived in Japan in September 1952 and was sent to Korea 16 December 1952



Figure 1 (case 1). Photograph taken on the ninth day of rash showing wide spread umbilicated vesicles. Note the early crusting on the abdomen and the left forearm.

Case 2 A 21 year old Negro was admitted to this hospital on 26 January 1953. Four days previously he had noticed the onset of sore throat, fever, and chills. Penicillin had been given for three days and on the fourth day a rash appeared on the face, trunk, and extremities. He had been referred to the clinic with a diagnosis of possible infectious mononucleosis or penicillin reaction.

A tentative diagnosis of smallpox was made and he was placed in strict isolation. Treatment included terramycin (brand of oxytetracycline) and penicillin to help combat secondary infection and scar ring, codeine, and Dobell's gargles. By the following morning the macular and early vesicular rash had become generalized except for the palms and soles. Fluids and a soft diet were well tolerated.

On 29 January the fifth day of the rash the patient first developed lesions on the palms and soles

A three-day period of mental confusion and disorientation was followed by beginning desquamation. Through even the most critical period the patient continued to take sufficient food and fluids orally. At the time of transfer of the patient to Japan the location of every smallpox vesicle could be seen as a lighter pigmented area of the skin but no definite scarring was noted.

The vaccination history on this soldier is significant. He had been in the Army nearly two years yet it seems that he had not had a successful vaccination against smallpox. Vaccination prior to service entry was denied. No vaccination scar could be found. His official immunization record with his company showed the following: 4 June 1951 immune; 20 April 1952 no reading; 29 October 1952 immune. (The patient did not recall this last vaccination and claimed that he was on temporary duty in another area of Korea when the remainder of the company was vaccinated.) This soldier admitted having had close contact with Korean civilian.

Case 3. A 21-year-old Filipino soldier was admitted to this hospital on 17 February 1953. When brought to the hospital he had well-developed and widespread macular and vesicular lesions and was acutely ill. Though a large vaccination scar was present a diagnosis of smallpox was made. The patient was placed on tetracycline and procaine penicillin therapy in addition to the symptomatic measures. The patient's course was stormy but after the first week he began to improve. Desquamation commenced on the fifteenth day and involved the hair, fingernails, and toenails.

This soldier was born in the Philippine Islands. He had received a successful vaccination in childhood. In March 1952 he was vaccinated, developed no reaction, and the result was not checked by a medical officer. He was sent to Korea in May 1952. In November he was again vaccinated but insisted he got no reaction. (Official immunization record unobtainable.) He had close contact with Korean civilians.

Case 4. A 21-year-old Negro was admitted to this hospital on 15 March 1953 with a diagnosis of dermatitis medicamentosa. Five days prior to admission he had developed fever, chills, and sore throat. He was treated with tetracycline and because a rash developed he was sent to the hospital.

He appeared seriously ill and vesicular lesions were widespread involving even the oral membrane, scalp, palms, and soles. A diagnosis of smallpox was made and strict isolation was instituted. He was given penicillin and tetracycline. On the fourth hospital day some of the facial lesions became pustular and both nostrils became occluded by lesions. The following day his tongue was swollen in his face and ankles edema

tous and his nose was swollen to twice its normal size. During the next three days many lesions became hemorrhagic, but the secondary infection slowly subsided.

Desquamation was complete on 26 May. There was mild alopecia but no loss of nails. Severe facial scarring resulted particularly on the nose.

This patient was inducted into the Army in 1951. He was sent to Korea in January 1953. Vaccination prior to entry into the service was denied. Careful examination disclosed no vaccination scar. There was an entry on the patient's immunization register to the effect that he had been vaccinated against smallpox in January 1953. He categorically denied ever having been vaccinated. He admitted to having had close contact with Korean civilians.

Case 5. A 21-year-old youth was admitted to this hospital on 1 April 1953. Both the referring and admission diagnoses were influenza. Four days prior to admission he had experienced the sudden onset of sore throat, fever, prostration, and severe aching in his back and extremities. His temperature was 101° F. He had a circular area, an inch in diameter, containing numerous small erythematous macules on the upper outer aspects of the left arm. An old vaccination scar was present in the right deltoid area.

During the second hospital day the patient became weak, lethargic, and vomited his evening meal. Two days later papular lesions appeared on the face, thorax, and other extremities. A presumptive diagnosis of chickenpox was made.

The patient was extremely ill with prostration, vomiting, and fever to 105° F. Lesions appeared on the palms, soles, scalp, and oral mucous membranes. By 6 April it became apparent that the correct diagnosis was smallpox. Umbilication of many vesicles was now evident. Procaine penicillin and terramycin were given to help combat secondary infection.

The subsequent course was uneventful. Desquamation was completed by 21 May, and no residual scarring was apparent.

This soldier was a native of Puerto Rico, successfully vaccinated in childhood. He entered the Army in May 1952. In July 1952, he was vaccinated but denied any reaction. He arrived in Korea in January 1953. The patient stated that he was supposed to have been vaccinated against smallpox aboard ship but denied receiving the vaccination. A history of close contact with Korean civilians was readily obtained.

Case 6. A 26-year-old Swedish soldier was admitted to this hospital on 9 June 1953. Four days prior to admission he had developed coryza, fever, chills, headache, and sore throat. Encephalitis was suspected and he was admitted to another United Nations hospital in the area. The spinal fluid was essentially normal. A febrile course was con-

tinued and on the day of interhospital transfer erythematous macular lesions first appeared on the wrists and later became generalized

Penicillin and terramycin were started. Some parenteral fluid was necessary during the first two days. The course of the disease was rather mild in spite of the fact that about 50 percent of the lesions became hemorrhagic. A few pustules appeared on the nose, forehead and cheeks. Desquamation was complete on 15 July. The hair and nails were unaffected and no permanent scarring was evident.

The patient was successfully vaccinated against smallpox at the age of eight years. When revaccinated in 1941 he denied a reaction. While still in Sweden he was vaccinated again on 16 April 1953 and this was read as immune the following day. On arrival in Korea on 24 April he was stationed in a rear area. Two weeks prior to onset of the illness he had visited a house of prostitution in which two persons with smallpox were discovered several days thereafter.

SYMPTOMS AND SIGNS

In these six patients the prodromal symptoms were coryza, malaise, sore throat and fever. Those present after admission included rash, lethargy, weakness, prostration, cough and hemoptysis. Only two patients demonstrated mental confusion and were disorientated; both of these were without a history of successful vaccination. Aching of the back mentioned in nearly all textbooks was seen in only two patients. Anorexia and vomiting occurred in four patients. Three patients did not have head aches. The rash appeared first on the trunk in only one patient.

DIAGNOSIS

Frozen vesicular fluid and fixed skin scrapings from these patients were submitted to the 408th General Medical Laboratory for studies. Information supplied by that laboratory placed the infectious agent in the vaccinia variola group.

From a clinical standpoint there was no doubt as to correctness of the diagnosis of smallpox in these patients. Diagnostic confirmation was obtained from both the Korean Public Health officers and more experienced United States Medical Corps members.

Many physicians have never seen a patient with smallpox and until having seen one exhibit a low index of suspicion. It is interesting to note that, though four patients were admitted with the rash apparent, in only one patient was smallpox suspected. A referring diagnosis of smallpox was not made in five of these patients. In an area where smallpox is endemic a strong suspicion of an occasional case must be present. Because the prodromal signs and symptoms are protean and common frequent

inspection for early skin lesions and vaccination history are the essentials in making early diagnosis and in preventing others being exposed

TREATMENT

Symptomatic treatment and good nursing care are still fundamental in this disease. Antibiotics are effective on secondary invaders. It is believed that secondary infection and resultant scarring is reduced by antibiotics given in sufficient quantities. The permanent scarring in one patient may have been the result of delayed hospitalization and antibiotic therapy. Only two patients complained of pruritus, and in one of these medication was necessary.

All patients complained of a severe sore throat. In spite of this, the maintenance of an adequate oral intake of food and fluid should be the cardinal aim of the physician. Frequent gargles cannot be too strongly recommended, they should be started early, at the first sign of sore throat, and continued on a definite schedule. The fever and prostration in the disease are severe. Alteration in body metabolism, cellular changes, fluid transudation, and tissue destruction are marked and can be likened to the changes produced by burns over a large area of the body. If adequate caloric intake is maintained the body has a good chance to respond. The patient who died lacked any oral caloric intake because of inability to swallow food.

VACCINATION

The value of smallpox vaccination has been demonstrated time and again. Though it can not offer absolute protection, a recent successful reaction is of great assurance. It is again the balance existing between virulence of the causative agent and the degree of immunity present that counts. The three patients who had received a successful vaccination in childhood had a less severe disease. None of the patients had a recent successful vaccination, and three had apparently never had a successful vaccination. It is interesting that the three patients having had childhood vaccinations were from Puerto Rico, the Philippine Islands, and Sweden.

American soldiers are presumably vaccinated on induction and again prior to being sent overseas. Errors in immunization can be entirely eliminated only if the physicians are charged with sufficient knowledge and interest. The physician should be certain of his own knowledge of interpretation of vaccination, the time interval between vaccination and interpretation, the correct entry in immunization registers, and the revaccination of any person without a definite reaction. Care must be taken

that immune is not recorded on patients who have had a no take

If every soldier could see a patient with smallpox, there would be no problem. The soldier would see to it that he was vaccinated on time, and successfully. In reality there are those who scheme to escape immunizations. A hospital patient who heard that a patient with smallpox had been admitted requested permission to return to his company for a vaccination. He stated that he had never received any immunizations in the Army because he always had a buddy who penciled in his shots. When the personnel in our own hospital unit were vaccinated 50 per cent had to be revaccinated because they failed to return for readings. Intensive efforts must be maintained to continue to vaccinate each soldier until a definite reaction is observed. Obviously a "no reading" or no reaction is ineffective and unacceptable in preventing spread of smallpox. A vaccination given correctly with a potent vaccine read at proper time by trained personnel and properly recorded, is the first line of defense against this disease.

SUMMARY

Six cases of smallpox occurred among United Nations personnel four in American soldiers. Three of the patients apparently had never had a successful vaccination. The other three had been vaccinated in childhood but had not been vaccinated successfully recently. The disease in these last-mentioned patients however, was less severe than in the other three. Although the majority of military personnel are properly immunized, constant vigilance, the detection of errors in vaccination and records and continued intensive education of medical department personnel are necessary to eliminate the possibility of future outbreaks of smallpox.

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CONTINUOUS RENAL CLEARANCE STUDIES IN EPIDEMIC HEMORRHAGIC FEVER

JAMES C SYNER *Captain, MC USA*
ROBERT A MARKELS *Captain MC USA*

SINCE early 1951, the Army Medical Corps has accumulated much information on epidemic hemorrhagic fever from its experiences in Korea. Documented and indexed, this data will serve as an excellent source for future reference either directly related to the specific disease in the area, or indirectly as workers borrow from these experiences in handling problems of a similar nature arising in another geographic area. The investigative work on hemorrhagic fever produced new knowledge of abnormal renal physiology. In addition to its immediate application in treating patients with hemorrhagic fever, it has great potential in the approach to other diseases in which the kidney is involved.

The clinical features, laboratory findings, anatomic pathologic lesions, and epidemiologic data of hemorrhagic fever have been reported at great length.¹⁻¹⁰ The appearance of specific renal abnormalities along with certain clinical manifestations during the course of the disease, are essential in order to classify a "suspect" diagnosis as "confirmed." For a diagnosis to be confirmed, evidence of renal abnormality must include albuminuria and an elevation of the blood urea nitrogen. Evidence of renal tubular insufficiency with diuresis of low specific gravity urine and diminished phenolsulfonphthalein output are always present in patients with confirmed diagnosis. The characteristic renal pathologic lesion as seen at autopsy, is considered to be near pathognomonic of the disease.¹ There is marked medullary congestion due to hemorrhagic diathesis. The cortex is pale and bulging so that the corticomedullary junction is very distinct. The pyramids present areas of necrosis surrounded by hemorrhagic medullary tissue. Microscopically, the glomeruli do not present as much change as noted in the tubules. Tubules of the loops of Henle and collecting tubules are surrounded by dilated, engorged vascular spaces and extravasated blood. They show epithelial degeneration and casts of all types including pigmented casts.

The nature and variable degree of renal function abnormality in hemorrhagic fever has been noted in previous reports.^{1-3, 10-12}

From Walter Reed Army Hospital, Washington, D. C. The studies were made at the 48th Surgical Hospital, Korea.

Froeb and McDowell described their findings in renal hemodynamic abnormalities when using standard clearance techniques. These investigators used renal clearance of inulin and paraaminohippurate as estimates of glomerular filtration rate and effective renal plasma flow respectively. The design of their study was basically a spot check on a certain day of disease consisting of three or four clearance periods of about 20 minutes each. In most patients spot checks were made from two to several days apart.

The study herein reported was undertaken in the fall of 1953 at a time when seasonal increase in case incidence was in progress. Its primary design was a continuous renal clearance study with around the clock perfusion of paraaminohippurate for estimation of renal blood flow changes during changes in the patient's clinical course. This primary design as suggested by Earl and McDowell was in contrast to the spot-check design of Froeb and McDowell's studies. It was reasoned that a continuous renal clearance study would provide information regarding characteristics of the disease process not demonstrated in previous investigations. In an attempt to determine this we did the following: (1) charted the time rate of fall in renal blood flow to determine if it was gradual or precipitous with hypotension; (2) charted the time rate of return of renal blood flow to normal to determine if it was gradual or precipitous; (3) correlated the time rate and degree of fall in renal blood flow with hypotension and shocklike state; (4) studied patients in the early febrile phase to learn if changes occurred in renal blood flow which might be missed by spot-check technique; and (5) correlated the changes in renal hemodynamics with clinical findings, blood pressure, total serum protein, hematocrit, urine volume, and urine specific gravity.

METHOD AND MATERIAL

In so far as possible patients in the early febrile phase of the disease were selected for study. An attempt was made to include only those patients in the third to fourth day of illness as determined from the clinical history. Thirteen patients in whom about 136 individual clearance periods were made were studied.

A polyethylene catheter was introduced into the femoral vein through a 16 gage thin walled needle. This method permitted continuous around the clock infusion without a single instance of tube occlusion or flow obstruction due to other causes. It eliminated the disadvantages inherent in prolonged arm vein infusion, namely, patient discomfort, bed confinement, and temporary disuse of an upper extremity for performing necessary chores. In some patients a continuous infusion was maintained over a period of four days without untoward reaction in the patient. With careful attention to urine flow, effective tunnel clamp adjustment, and

frequent blood sample analysis near constant levels of plasma para aminohippurate were realized

No standardized procedure was established for the time interval between clearance periods. The frequency of clearance periods was largely a function of the phase of the disease and the nature of the clinical course. With an unstable clinical course presenting varied and multiple changes, an increasing frequency of clearance periods was used. In general, however, we followed a program of daily clearance periods in the early morning, early afternoon, late afternoon, early evening and late evening. This program provided data on renal hemodynamics every four to six hours over a given 24-hour period. Reported values for these periods are based on two or more clearance periods of from 20 to 30 minutes each. Five of the 13 patients studied during the acute phase were checked at some time during the convalescent or diuretic phases.

Glomerular filtration rate and effective renal plasma flow were measured by standard endogenous creatinine and para amino hippurate clearance techniques.^{11, 14} Our procedure was similar to that of Froeb and McDowell. A tunnel clamp consisting of two tongue depressors and two screw clamps gave adequate control of the infusion rate. After each urine collection the bladder was washed with 60 ml of normal saline solution two or three times followed by 30 ml of air. Because of the clinical problems of fluid control and restriction it was not possible to effect a water diuresis prior to each clearance.

RESULTS

Figures 1 and 2 present a summary of the renal hemodynamics in patients from the third through the tenth day of disease.

Figure 1 summarizes the data on continuous endogenous creatinine clearance in representative patients. The data illustrate the following characteristics:

1. In general, clearance of endogenous creatinine in most patients was not as markedly impaired as clearance of para aminohippurate. This resulted in relatively high filtration fractions. A likely explanation for the creatinine data will be discussed later in this article.

2. In patients C C, E H, and C C, extremely low clearance of endogenous creatinine corresponded with markedly reduced para aminohippurate clearance. In these patients marked hypotension, a shocklike state, and oliguria were outstanding clinical features.

3. In patients R S, R T, and G S, there was relatively slight change in clearance of endogenous creatinine although substantial drop in clearance of para aminohippurate (fig. 2) was

recorded. There was no significant change in blood pressure, urine flow, or hematocrit during this period in these patients (tables 1-4).

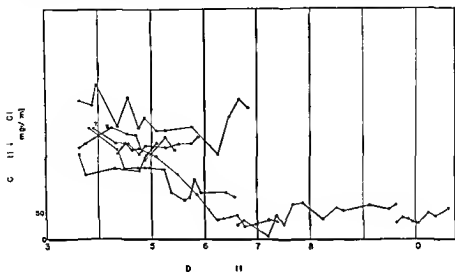


Figure 1. Creatinine clearance in patients with acute renal failure.

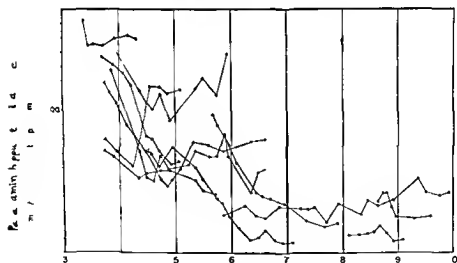


Figure 2. Parathyroid hormone levels in patients with acute renal failure.

4. The time rate of fall in endogenous creatinine clearance was gradual and not precipitous despite wide fluctuations in blood pressure in some patients during this period (tables 1-4).

TABLE 1 Renal function during febrile phase and in convalescent period of heroinergic fever

Day of disease	Hour	Temp °C	C.P.A.H. (ml/min)	C.Cr (ml/min)	Ultracentrifugation	Urine (ml/min)	Urine specific gravity	Urine lb/min	Blood urea nitrogen (mg./100 ml)	Hematocrit	Serum total protein (gm./100 ml)	Blood pressure (mm Hg)
2	1611	103 ²	705	300	42	1.75	1.054	Neg	16.5	52	6.7	140/76
	1800	103 ²	700	294	42	1.25	1.107	Neg		50		138/68
3	2030	105 ⁴	670	300	44	99	1.020	Trace				140/80
	2300	104	620	292	46	1.13		1+				140/80
	0845	100 ⁴	334	241	72	1.06	1.015	Trace	24.4	52	6.7	130/70
	1130	99 ⁴	300	310	96	1.14		Trace				126/70
	1430	100 ⁴	270	220	81	92		1+				120/80
4	1900	100	370	235	63	94	1.013	3+			6.6	140/70
	2030	98 ⁴	390	275	70	2.1	1.012			50		140/80
	0900	98 ⁴	450	244	54	78		1+	26.2			134/82
	1200	98 ⁴	410	236	57	68						
	2100	98 ⁴	410	250	60	73		1+				122/76
Convalescent period												
9	1010	98 ⁴	798	192	24	50	1.006	Neg	12	44	6.6	136/74
	1030		750	170	22	3.63	1.007	Neg		44	6.6	
	1100		800	170	21	3.63	1.007	Neg				146/82

C.P.A.H. clearance of para aminohippurate C.Cr clearance of creatinine both in ml/min

TABLE 2 R l f t dur g byp t ms and lg pl d m v t t p d f b morrhag fev

D y d e	H	T m- p	C PAH (ml / m)	C CR (ml / m)	F l f c	U (1 / m)	Un p- e v- e y	U alb min	Bl d ur nog (mg /100 ml)	Hem cr	S m l p (gm./100 ml)	Bl d p (mm Hg)
4	1000	102	336	154	45	775	1 017	1	19 1	52	6 25	130/80
	1200	102	320	177	59	775	1 015	2		53	6 3	
	1300		320	166	52	68	1 018	2+		53	6 3	124/80
	1700		370	171	53	75		3		55	6 3	
	2700	101	360	160	57	75	1 014	3	35 2	55	6 25	120/80
5	0900	101	280			70		3+		58	6 25	104/60
	1300		220			55		3+				
	000	100	120			46		3+		60	7 0	
	2400	99	37			29	1 015	3		60	7 0	0/40
	0900	98	17	22	1 20	52	1 014	3+	59 7	57	7 0	105/50
6	1100	98	49	24	49	58		3+		57	7 0	
	1400	99	75	26	52	71	1 016	3+		55	7 0	90/50

TABLE 2 Renal function during hypotensive and oliguric phases and in convalescent period of hemorrhagic fever—Continued

Day of illness	Temperature	C.PAH (ml/min)	C.Cr (ml/min)	Filter fraction	Urine (ml/min)	Urine specific gravity	Urine albumin	Blood urea nitrogen (mg/100 ml)	Hematocrit	Serum total protein (gm/100 ml)	Blood pressure (mm Hg)
	1800	40	13	32	42		4+		52	7.0	
	2100	36	13	36	42		3+		51	6.7	106/60
Convalescent period											
23	1330	410	170	41	4.31	1.004	N.R.	14	44	6.8	136/74
	1445	400	166	41	3.68	1.001	Neg.				140/76
	1545	470	150	36	2.2	1.005					
	1645	474	153	36	2.92	1.005	Neg.				128/90

C.PAH clearance of para aminohippurate C-Cr clearance of creatinine both in ml/min

TABLE 3 R t f i dur g tb d i pb nd tb l i p d f b m rh g c f

D y f d s	fl	T m- p ur	C PAH (ml / min)	C-Cr (ml / m)	F ltr f c-	U (ml / m)	U p e- f g v y	U lb m	Bl d g (mg /100 ml)	H m cr	S um to al p (gm /100 ml)	Bl d ur p (mm Hg)
7	1400	98	185	33	18	25	1000	Tra	150	44	84	142/88
	1500	98	210	45	21	338	1001	T				145/90
	1630	99	210	44	21	35	1001	T				
	1930	99 ^a	185	40	21	291	1002	T		44		144/100
	2100	99	145	50	34	372	1002	Tra		45	83	146/100
	2300	98 ^d	148	51	34	344	1001	T				136/100
8	0900	98	140	48	34	337	1001	T	135	46		124/92
	1300	98 ^d	140	56	35	33	1002	T				120/90
	2000	98 ^d	150	58	38	336	1001	T				
							Conval nt p r d					
20	1300	98	640	205	32	38	1003	N g	16	41	66	120/76
	1400		630	185	29	321	1005	N g				122/78
	1500		645	179	28	36	1005					
	1600		615	179	29	385	1003				66	126/72

CPAH 1 f p ra ms b pp i C Cr l ara n f u both ml/m

TABLE 4 Renal function during the early convalescent phase of hemorrhagic fever

D y of di a	U r	T m p t t r	C P A H (ml / ml)	C C (ml / ml)	Filtr tio f c tio	U n e (ml / min)	U r n p e cific gr w lity	U rine lb m n	Blood ure trogen (% /100 ml)	Hem toctit	S rum total prot in (gm /100 ml)	Blo d pressure (mm Hg)
25	0900	98 ^a	510	170	33	2.1	1.004	Neg	26	44	66	136/74
	1300		510	166	32	2.0	1.004	Neg				
	1400		500	150	30	2.3	1.001	Neg				140/76
	1500		530	150	28	1.88	1.002	Neg				
	1600	98 ^a	545	140	25	1.76	1.004	Neg				140/76
	1700		520	150	28	2.01	1.004	Neg				
	1800		524	153	24	2.33	1.006	Neg				140/92
	1900		530	153	29	2.2	1.005	Neg				
	2000		550	150	27	2.3	1.003	Neg				128/90
	2300	98	540	153	28	2.9	1.004	Neg				

C P A H clearance of para-aminohippurate C Cr clearance of creatinine both in ml /min

5 Impairment of clearance of endogenous creatinine was present in some patients in the early febrile phase before hypotension oliguria and/or hemoconcentration appeared. This suggested early renal changes before more obvious and gross clinical changes were apparent.

The results of continuous para aminohippurate clearance in representative patients are summarized in figure 2. The data illustrate the following characteristics:

1 The outstanding feature was the gradual and progressive diminution in this function indicating failing effective renal blood flow. The curves clearly show that precipitous fall within hours is not the usual manner of functional change but that over a 24- to 72 hour period maximum diminution results.

2 Significant diminution in clearance of para aminohippurate may be present in the early febrile period at a time when blood pressure is stable, urine flow copious, specific gravity of urine indicative of adequate concentration, and hemoconcentration is absent (tables 1-4). At this time, however, evidence of diffuse vascular disease is apparent in pharyngeal conjunctival axillary and thoracic petechiae and ecchymoses at various body pressure points.

3 A correlation in the time, rate, and degree of fall in para aminohippurate clearance with the clinical course of the disease was apparent.

4 The curves demonstrated maximum fall in clearance of para aminohippurate occurs on the fourth day in patients with mild disease and on the fifth to sixth day in those with more severe disease. In a patient with clinically mild disease such as in patients R, T, M, T, and R, S, the return of clearance toward normal was underway at a gradually progressive rate within 24 hours of the maximum fall. In patients with clinically severe disease such as in patients C, C, E, H, C, C, and L, C, maximum diminution persisted during the study period of from 48 to 72 hours.

5 In all patients studied excepting patient M, T, the return of para aminohippurate clearance to normal did not occur within a 24-hour period from the time of maximum fall. In most patients there was a tendency to plateau at the point of maximum fall for 48 to 72 hours without significant change in the clearance function.

6 C, B, was a control patient with lobar pneumonia whose clearance of para aminohippurate remained normal throughout the course of illness even in the presence of high fever.

THE FEBRILE PHASE

Table 1 summarizes data on renal function during the febrile phase of disease. The patient had characteristic clinical features of hemorrhagic fever with fever, nausea, vomiting, headache, marked erythema over the malar eminences and anterior chest, axillary and pharyngeal petechiae, a relative oliguria on the fourth day of disease, a mild brief diuresis of low specific gravity urine from the eleventh to nineteenth day and a maximum rise in the blood urea nitrogen to 30 mg per 100 ml on the seventh day. The significant changes in renal hemodynamics were as follows:

1 The effective renal plasma flow on admission as measured by para aminobipurate clearance was within normal range.

2 The effective renal plasma flow began to fall during the second day of disease. At this time blood pressure was stable at normotensive levels, and the blood urea nitrogen, urine flow and specific gravity were normal. The hematocrit, however, was slightly increased, indicating some degree of hemoconcentration (table 1).

3 The striking pattern in functional change was the slow, progressive manner in which the effective renal plasma flow diminished to abnormal levels during the febrile phase. At the time this fall in renal blood flow was taking place, the patient demonstrated evidence of severe widespread vascular involvement in the form of pharyngeal, conjunctival, axillary, and thoracic petechiae, and ecchymoses over body pressure points.

4 Follow up studies revealed that the effective renal plasma flow had returned to normal limits by the ninth day of disease. At this time residuals of tubular damage were manifested by low specific gravity urine, inability to respond to pitressin stimulation, and abnormal urinary concentration test.

5 As measured by clearance of endogenous creatinine there were no significant changes in the glomerular filtration rate. The clearance of endogenous creatinine was considerably increased during the patient's febrile state as compared to the afebrile state. These high values when compared to the decreased clearance of para aminobipurate resulted in high filtration fractions which returned to normal values during the convalescent period (table 1).

6 The data obtained during the convalescent phase indicated that renal hemodynamics had returned to normal limits.

HYPOTENSIVE AND OLIGURIC PHASES

Table 2 summarizes data on renal function during the hypotensive and oliguric phases with follow up data obtained during the convalescent period on the twenty third day of disease. The clinical course of this patient's disease was much more severe than that of the patient recorded in table 1. The clinical severity was attended by a more severe impairment in renal function as measured by laboratory techniques (compare tables 1 and 2). The significant changes in renal hemodynamics were as follows:

1 Again as noted in table 1 the striking pattern in functional change was the slow progressive manner in which the effective renal plasma flow diminished to abnormal levels. This fall occurred independently of blood pressure status and was well underway before maximum rise in blood urea nitrogen, hematocrit, and albuminuria had occurred (table 2).

2 In contrast the fall in the glomerular filtration rate was much more directly related to the onset of hypotension, maximum rise in blood urea nitrogen, maximum rise in hematocrit, and oliguria.

3 The drop in urine volume was progressive rather than precipitous as recognized in a gradual fall from 0.70 ml per minute to 0.29 ml per minute throughout the fifth day of disease.

4 The increased severity of this patient's disease as compared with the course in the patient recorded in table 1 is further noted in the failure of the effective renal plasma flow to attain normal levels by the twenty third day of disease. However, it was markedly improved over the minimum noted on the sixth day of the disease.

DIURETIC PHASE

Table 3 summarizes renal function during a representative diuretic phase with follow up data obtained during the convalescent period on the twentieth day of disease. The clinical course of this patient's disease had been moderately severe although not as grave or stormy as that of the patient recorded in table 2. At the time of study he was secreting copious amounts of low specific gravity urine which reached a maximum flow of 6.5 liters on the eighth day of disease. The significant changes in renal hemodynamics were as follows:

1 The effective renal plasma flow remained at an abnormal low level (table 3) without significant change during the two days of continuous clearance study. Its value was independent of marked rise in urine volume and the presence of hypertensive blood pressure recordings. In the presence of extensive tubular

damage, the alteration of tubular epithelium could result in failure to extract para aminohippurate from renal peritubular blood, thereby contributing to the low para aminohippurate clearance

2 The glomerular filtration rate also remained consistently low without significant change during the period of continuous clearance study. It was independent of the marked rise in urine volume (from 570 ml on the fifth day of disease to 6,500 ml on the eighth day of disease)

3 With a more proportionate diminution in clearance of para aminohippurate and endogenous creatinine, there were normal and relatively consistent values for filtration fractions. This would suggest a phase of similar functional status for both glomerular and tubular sites although the glomeruli on autopsy specimens do not present nearly the abnormal changes noted in the tubules.^{1,4,5} However the shortcomings of the Jaffe reaction, used for creatinine determinations, throughout this study are important factors in interpreting the glomerular filtration rate as measured by the clearance of endogenous creatinine. This point will be discussed in more detail later in this article.

EARLY CONVALESCENT PERIOD

Table 4 summarizes data on renal function during a representative convalescent period. The clinical course of the disease of the patient represented had been moderately severe with a rather stormy course during the hypotensive and oliguric phases. He had a brisk diuretic phase with copious urine flow of nearly 5 liters over one 24 hour period. At the time of this study he was ambulatory, eating well, gaining weight, and complaining only of easy fatigability and mild lethargy. The significant findings in renal hemodynamics were as follows:

1 Low normal values for the effective renal plasma flow and the glomerular filtration rate were noted on the twenty fifth day of disease.

2 Urine flow was at normal daily output of from 2 to 2.6 liters.

3 Evidence of tubular abnormality persisted in that his urine was of low specific gravity and it failed to respond to pitressin stimulation or to concentrate after withholding liquids.

4 Throughout the 24 hour period of continuous renal clearance study there was no significant change in the values obtained.

DISCUSSION

No serious attempt can be made to compare those data on filtration fractions and glomerular filtration rate with those of Froeb and McDowell because different methods were used. Froeb and McDowell used inulin as a measure of the glomerular filtration

rate in using creatinine clearance as a measure of this rate an obstacle in the matter of specificity of function was introduced. That creatinine is not as specific a clearance substance as inulin for estimating glomerular filtration is well appreciated. Previous workers^{1, 2} have demonstrated that in man and the higher anthropoid apes clearances of creatinine definitely exceed clearances of inulin and of ferrocyanide. From their work it must be recognized that a certain proportion of creatinine found in the urine of man is the result of secretory activity of renal tubular epithelium.³

Another fact which adds difficulty to comparative study is the wide variation in creatinine clearance noted under normal conditions. At average rates of urine flow this variation may extend from 86 to 232 ml per minute.⁴

Adding further to the differing values by the two methods is the nonspecificity of the Jaffe reaction herein employed for the detection of creatinine. Langley and Evans⁵ and Miller and Dubos⁶ demonstrated that of all the chromogenic material normally found in blood all that in the serum and one half that in cells gave the color reactions of creatinine with alkaline picrate, whereas the concentration of true creatinine as indicated by the enzymatic method of Miller and Dubos⁶ is about one half that of the Jaffe reaction.

Another reason for discrepancy in and limitation to comparative study is found in the work of Miller and Dubos.⁶ These workers found that substances other than creatinine which gave the Jaffe reaction will accumulate in the plasma in nephritis. Therefore data on the concentration of creatinine in the blood in renal disease must be accepted with reservation.

From the data available however it is believed that the fall in the glomerular filtration rate was more closely correlated to decrease in onset of hypotension, rising albuminuria, lowered specific gravity of urine, rising blood urea nitrogen and hemoconcentration than was the fall in the effective renal plasma flow. The continuous renal clearance technic demonstrated in patients M T G S and L C (fig 2) that the effective renal plasma flow may be diminished early in the febrile phase. Later in the febrile phase a slow progressive diminution underway for 24 to 48 hours could result in a significant fall in the effective renal plasma flow before proteinuria, low fixed specific gravity of urine, hypotension, oliguria, hemoconcentration or rising blood urea nitrogen appeared.

The conclusions drawn from this data agree with the suggestion of Froeb and McDowell, namely that renal failure is secondary to alterations in renal vasculature. Because of the alterations in

vaseulature, probably due to direct action of a toxin progressive fall in renal blood flow occurs. The onset of this change begins early in the disease at a time when other equivalents of generalized vascular damage (marked erythema over malar eminences and the anterior part of the chest, crops of conjunctival, axillary, and pharyngeal petechiae, ecchymoses over areas of pressure on hips, shoulders, feet, and ankles, positive Rumpel Leede test for capillary fragility hematemesis) are present. The ultimate appearance of renal failure is most likely secondary to this alteration in renal vasculature. Then with critical reduction in renal blood flow and pressure from extravasated blood, tubular failure occurs secondary to anoxia of the epithelium. The data herein given tend to support this conclusion, rather than the concept that a toxic substance acts directly on the renal tubular epithelium.

SUMMARY

Continuous renal clearance studies in patients with a confirmed diagnosis of epidemic hemorrhagic fever as experienced in Korea revealed information not previously described. Continuous measurement of the clearance of para aminohippurate demonstrated that diminution in effective renal plasma flow can occur early in the febrile phase of hemorrhagic fever before significant change in the clearance of endogenous creatinine. This was at a time when clinical findings of generalized vascular damage (diffuse petechiae, ecchymoses, hematemesis, positive Rumpel Leede test) were present, but before evidence of renal failure appeared. There was a tendency for a critical fall in the clearance of endogenous creatinine to occur only in those patients in whom hypotension, a shocklike state, and marked oliguria were observed. In most patients the time of a critically low level of effective renal plasma flow was during development of plasma leakage (rising hematocrit). A significant decrease in the clearance of para aminohippurate or of endogenous creatinine may occur in the absence of hypotension or oliguria. Return of the clearance of para aminohippurate and creatinine to normal occurs before tubular concentrating capacity. The data suggests that renal failure is secondary to renal vascular damage and not a toxin acting directly on the renal tubular epithelium.

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KOREAN SURGERY

Eleven reports from th Surgic l Rese rch Team in Kore and the Army Medical Service Grad are School Walter Reed Army Medical Center Washington D C appe r in the M rch 1955 ssue of the *Annals of Surgery* Thes t po ts on battle c ualties will be of int rest to all medical officer

THE CHALLENGING ART OF PSYCHOTHERAPY

Materials and Methods and Uses of Hypnosis

JOHN E. NARDINI *Commande (MC) USN*
WARREN L. JONES *Lieutenant (MC) USNR*

PSYCHOTHERAPY is the treatment of mentally or emotionally ill patients by direct personal contact, primarily on a verbal level. All doctor-patient relationships contain a psychotherapeutic element. Only in recent years has a reasoned, studied approach been made to the problem. As with many modern psychiatric concepts, modern psychotherapy may also be considered to have had its inception in the work of Freud. As psychiatry evolved from the body of neurology, increased attention was centered on concepts of personality development, psychopathology and psychotherapy. The greatest single impetus has been the introduction of psychoanalysis. In spite of many serious limitations, there has been a determined effort to evaluate therapeutic needs, techniques and results. From the classic analytic technique a wide variety of forms of treatment have been developed and used. These forms vary in manner, duration and depth of treatment in direct relationship to the patient's needs. At present, one of the greatest handicaps in evaluating psychotherapy is the inability to measure results. Criteria of cure are most inexact, and it is difficult for the therapist to divorce his personal bias from his own evaluation of therapeutic benefit after having invested considerable emotion, time and energy.

THE PLACE OF PSYCHOTHERAPY IN MEDICINE

It has been variously estimated that 50 percent of all patients who seek medical aid have no significant physical illness. A large proportion of these patients need some degree of psychotherapeutic assistance. In some cases only a superficial need is present, but in others the need is more extensive. Few patients are satisfied to be told that they have no diagnosable condition or that their complaints are imaginary. This very often throws them directly into the hands of charlatans. This produces poor results for the patient, wastes his money, and indirectly supports and encourages an ill-trained and relatively unethical group.

Almost all physicians should have as much practical knowledge and skill of psychotherapy as possible. Psychotherapy is based on a dual relationship hence the role of the patient and the therapist should be considered separately.

THE PATIENT AND THERAPIST

One of the most significant features to consider is that psychotherapy cannot be forced. Complete collaborative effort is essential. Most patients do not know what psychotherapy entails and hence cannot be expected to say whether or not they desire it. Further they should from the beginning wish to speak to the psychiatrist on their own initiative. It is only in rather few instances that psychotherapy can be helpful where the patients initially have and retain a hostile rejecting attitude. Qualities that make therapy possible are a desire on the part of the patient to be helped, a potential capacity for intellectual honesty (because the patient is destined during the therapeutic process to become consciously aware of some of the less desirable aspects of his nature), sufficient intelligence and a willingness to make or attempt to make significant changes in his behavior and way of life.

Much could be said regarding the qualities of the therapist. The attributes which seem most important in the successful therapist are a genuine sympathetic interest in people and human nature, a great deal of patience, a reasonable knowledge of psychology and psychodynamics, a good grounding in general medicine so that he is capable of separating functional from organic complaints, considerable tolerance and freedom from bias (or an adequate awareness of his own prejudices if any) and a considerable curiosity toward and interest in advancing the understanding of therapeutic problems. For treatment to be successful the therapist must be sufficiently sympathetic to his patient so that he will exert his best efforts yet sufficiently detached so that he will not become overly involved emotionally with his patient. The therapist should be honest, sincere and interested in the patient and his problems. The therapist's attitude may be natural or if preferred for some reason tailored to suit the needs of a particular patient or situation.

THE THERAPEUTIC SITUATION

Given a qualified therapist and a patient who desires treatment the first step is the referral. In general the referring physician should make it clear to the patient that he is unable to find any significant abnormal organic condition present and that sometimes emotional factors can produce those same symptoms that for these reasons and in the best interests of the patient, he would like the patient to talk to a psychiatrist who might be able

to offer some help in determining the nature of the condition and perhaps provide some treatment. It is far better that the patient refuse to see the psychiatrist at that point than to have him come to the interview so full of resentment, hostility and rebellion that the psychiatrist's and the patient's time are equally wasted, and the patient subsequently prejudiced in his dealings with physicians in general.

Considerable time is now required for psychotherapy, extending from a matter of several interviews up to complete psychoanalysis of six hourly sessions per week over a period of three years. There is still considerable disagreement as to which patients require brief or prolonged treatment. In general it can be compared to minor and major surgery. The patients who are least disturbed and have the least difficulties can often be benefited by only a few sessions. It is often difficult to say whether these same patients would have recovered spontaneously or whether they might have developed further serious psychiatric illness. Sometimes during these shorter therapies it is possible to recognize a significant and major issue, which when pointed out to the patient can be used by him to reorganize his thinking or approach.

In the therapeutic situation and in all doctor-patient relationships transference phenomena are important. By this, we mean that the patient unwittingly and unconsciously tends to project the same feelings toward the therapist that he had toward significant people (primarily parents) earlier in his life. Thus, if his feelings were positive and contained love for the parent, he would reflect the same toward the therapist. In the same manner, negative, hostile or rebellious feelings would be reflected in some way toward the therapist. This helps to account many times for what appear to be irrational attitudes on the part of our patients, and unless considered in this light can provoke the physician into unwise rejection and hostility, or an equally unwise sense of his own greatness. In general it can be said that the more frequently treatment is given and the longer it continues, the more extensive the transference relationship becomes. In the analytic situation it is essential that this so-called transference neurosis be resolved.

At a fairly early stage in the treatment, it is essential for the therapist to carefully evaluate the patient's assets and liabilities on a fair and impartial basis. It is folly to expect that every patient will be able to achieve the same results. It is likewise folly to presume that treatment will often make a patient greatly better than he has ever been at his best before. At some point in the treatment it is desirable that the patient himself realistically recognize his basic assets as well as his liabilities.

GOALS OF TREATMENT

On the surface it would seem to be a simple matter to define the goal of treatment, however it is one of the most evasive and difficult aspects of therapy. Confusion often stems from the fact that there are two sets of goals in mind one the patient's and another the therapist's each separately arrived at and differently determined. The other major difficulty is that patients experience great difficulty in establishing their own treatment goals. Many have no idea of what therapeutic goal to strive for while others place the goal at an unrealistically high and unobtainable level. Treatment is best accomplished when the goals are realistically established and the therapist does not impose or force his own concepts on the patient. Goals may vary from the eradication of a symptom to a thorough reorientation toward life and a significant and extensive reorganization of attitudes and personality. Some patients establish as their goal the ability to alter their husband or wife or to become so improved that they can incorporate in themselves all of the good and desirable characteristics that they observe in others. These are not reasonable goal concepts.

When considering the neurotic patient it must be realized that his symptoms have probably served as a prop for many years. If the prop is to be successfully removed in the course of treatment it must simultaneously be replaced. Benefit or cure requires the patient to realize the irrationality of the neurotic mechanism and the underlying factors of insecurity and anxiety. He will further need to develop a more realistic tolerance and love of self and his fellow man. Hate is a luxury no man can long afford. Without self respect one cannot be happy and cannot love or respect others. Lack of self respect makes for an ever increasing isolation which must be broken if the patient is to be helped.

Psychosomatic disorders are little different psychotherapeutically from other conditions except that a useful guide to effective treatment exists in the exacerbation or abatement of symptoms. The conflicts and emotional disturbances are often deep seated, and considerable therapeutic time and effort is required. Contrary to some opinion it is believed that the same person is capable of a wide variety of psychosomatic complaints which tends to belie the concept of specific emotional causative factors. Also the same person is capable of producing different somatic symptoms in different areas at different times. Much work remains to be done in studying and correlating basic personality types, emotional complexes and the resultant psychosomatic symptom pattern.

MISCELLANEOUS FACTORS

The general tenor of psychotherapy is reorganization of the patient's ego strengths so that he is a more co-operative, useful, and probably more conforming member of society, but with retention of his spontaneous creative capacities. The psychotherapist should not make the mistake of trying to treat a patient as though he lived in a vacuum, free of the constant social, cultural, political, moral, and religious influences that beset him on all sides and at all times. A patient subjected to an over permissive form of treatment designed to rid him of restricting and paralyzing fears and guilt may have to pay too great a material and spiritual price if he does not remain within the bounds of normal social living. Rarely is it indicated, for example, that a psychiatrist should become personally involved pro or con in the matter of religious faith.

In the minds of those who first come into serious contact with psychiatry there is the belief that a given set of diagnostic psychodynamic principles and formulas exist, and that when these have been mastered and applied to a treatment situation the patient's troubles will promptly fall away. This is unfortunately not the case. The dynamic principles and theoretic formulations at hand offer considerable help in understanding the nature of psychopathologic processes in certain areas in certain patients, but it is virtually impossible for them to provide an adequate explanation for every complex conflict symptom and its total interrelationship. One must avoid becoming so bogged down in trying to ferret out separate significant dynamic mechanisms that the over-all needs of the patient are missed.

Some basic concepts however are essential such as a comprehension of security feelings. It is important to understand the different mechanisms that undermine security and the resultant symptoms that different persons may manifest when insecure. The patient is rarely ever able to state openly that he is insecure. It is therefore necessary that the therapist recognize insecurity by understanding its significant manifestations. It is important to understand that many forms of apparently foolish and useless behavior and ineffective, bizarre forms of thought represent in reality inadequate defenses against anxiety. Another common response which is true both individually and collectively is that of deprivation and persecution → frustration → aggression, which if blocked → depression and apathy.

SUGGESTIONS FOR THERAPEUTIC APPROACH

The therapist must listen carefully and meaningfully. This involves constant thinking during the interview and an attempt at

correlating significant utterances with past experiences reactions and statements

The patient should be allowed to discover and recognize significant relationships himself whenever possible. These discoveries are often most appreciated by the patient and most helpful to him in reorganizing his new approach to his problems.

Interpretations should be timed accurately. Any interpretation offered the patient regarding his psychologic pattern gains or loses in force with proper or improper timing. It is extremely difficult to teach this most significant process because it never occurs twice the same way.

Abreactive productions are usually of benefit and should be allowed when they seem to come forth freely and spontaneously. Patients usually do not produce more than they are able to digest, at least eventually.

It is advisable to instruct the patient to make no major life decisions during the course of extensive treatment.

It is difficult but necessary to recognize and handle the patient's resistances to treatment as they arise otherwise the course of treatment may be slowed or blocked to further progress.

While we are accustomed to thinking of our usual form of communication as verbal there are many wholly nonspecific manifestations on the part of the therapist consisting of facial expressions gestures change of position tone of voice and even occasional unintelligible grunts which can just as effectively convey significant meaning to the patient. These should be used only in keeping with the therapist's ability to communicate in this fashion.

A frequently effective means of getting the patient to see the relationship of his symptoms to anxiety situations is to carry him back to the earliest possible episodes which were associated with the anxiety. With practice on the part of the therapist and the patient, this is often a rewarding device.

As soon as possible the therapist should attempt to determine or recognize the central core of the patient's problem and to isolate the major and minor conflicts so that he may best guide the course of therapy.

Playing God is likely to invite considerable subsequent dissatisfaction for both patient and physician. Direct advice is best avoided except at times in single interview sessions and even then the patient should be advised that because he is the one involved and will be obliged to live with the decision the final decision should be his own.

HYPNOSIS IN PSYCHOTHERAPY

In introducing a discussion of hypnosis and its application to psychiatric treatment, it is necessary to describe the characteristics of the condition. Despite the frequent demonstration of hypnosis, popular interest in the subject, and years of research, relatively little is known regarding the state described as hypnosis. Though numerous theories have been advanced, it seems best to regard hypnosis as an alteration of consciousness which may occur in varying degrees. Hypnosis has found general acceptance in the field of entertainment, understandably so because numerous unusual stage tricks have been devised making use of a small area in the total hypnotic spectrum.

Hypnosis as an effective medical technic has been accepted in varying degrees in the past. History reveals that prior to the introduction of chemical anesthesia hypnosis often was used for major operations. Hypnosis, both in the past and at present, has found application in various fields of medicine and surgery.

Psychiatry has been slow to absorb and make use of the possibilities of hypnosis. Probably one reason for this is that psychiatry is vague enough without adding another vagary. Also, the difficulty of inducing a workable stage of hypnosis has been a significant barrier. It is understood that one of the reasons Freud turned away from hypnosis was his difficulty with its production. Valuable phenomena may be brought out in the light or medium stages of hypnosis; however, only the deep somnambulistic stage permits the development of age regression, recall of repressed memories, complete amnesia, and disintegration of blocking resistances.

Psychotherapy as a process of treating mental illness is a cooperative enterprise. This demands the utmost of the patient's emotional and intellectual energies and taxes the psychotherapist to help without hindering the patient in his process of reintegration and progressive independence from the therapeutic setting. Even in the hands of the most capable therapists, this is often time consuming, prolonged, expensive, and at times uncomfortable. Recent experiences with hypnosis have indicated the possibility of its shortening treatment and augmenting the process to the advantage of both patient and therapist. Hypnosis is not a form of psychiatric treatment *per se*; its use is analogous to the use of anesthesia in surgery, permitting psychotherapy to be conducted under a kind of mental anesthesia. This agent permits a clearer view of many hidden, guarded areas of the mind and has the property of permitting psychic probing with greater safety for the integrity of the personality structure. A tenuous mental adjustment which could disintegrate into a state of psychotic

disease or a major panic reaction is given protection for example by the hypnotic induction of amnesia at the conscious level. Hypnotic applications in psychotherapy may be said to act as a buffer during intense emotional reactions incident to the processes of psychotherapy.

The hypnotic eradication of a psychogenic symptom is usually useless because the majority of these conversion or hysterical symptoms represent a mental compromise which in effect, avoids even greater distress. Taking away the symptom without changing underlying structures of the mental makeup leaves the patient in a bad spot, giving him no alternative but to fill the hypnotically produced gap with some new compromise for relative comfort of his partially disabled ego. It has been found effective to use hypnosis for example in the management of an hysterical paralysis by assisting the patient under hypnosis to gain control of a paralyzed area yet leaving him with a small remaining area of paralysis to which he can attach on an unconscious level the same dynamics that qualitatively produced his original more generalized symptom. For example an hysterically paralyzed arm could be converted into a residue of paralysis involving only the little finger hypothetically leaving the patient with a degree of stop-gap mental compromise but with fairly adequate function of a member that may be instrumental in making his living. When meddling with the processes of personality structure particularly during times of neurotic exacerbation or prepsychotic dysfunction we must be careful not to treat a symptom which is actually figuratively speaking the only remaining crutch for the ego which enables it to limp along to the aid of reality.

From a technical standpoint it appears that hypnotic processes cannot be forced or produced against the patient's will. The deeper stages of hypnosis are invariably attained through the active participation of the patient. The patient by his own decision enters a state of altered consciousness and while in this state participates in the incorporation of suggestions given by the hypnotherapist. It is the responsibility of the therapist to direct an accurate approach. This entails judgment in regard to the patient's capacity to accept and make use of suggestions. The timing of these suggestions is of extreme importance. A psychotherapist soon learns that during the course of psychotherapy the stakes are high much may depend upon what would under ordinary circumstances appear to be a very minor or trivial matter. Words, suggestions and interpretations made by a psychotherapist may be likened to the scalpel in surgery. Mistakes in their use as in the use of the scalpel can prove disastrous severely crippling a patient who otherwise might have had a fairly optimistic prognosis. Reportedly the use of hypnosis permits wider

exposure, revealing a more direct approach to the psychopathologic condition, limiting mistakes, and giving more control of the field of psychiatric treatment.²

One example of the safety factor in hypnotherapeutic technique is that of assisting the patient to project his pathologic mental content onto hypnotically fantasied secondary objects.³ Later these projections of the patient are incorporated into the process of treatment. One such hypnotic technique is called "the theater technique." This method is occasionally used with patients who are suffering from acute anxiety symptoms of recent origin. A fairly deep level of hypnosis is induced in the patient and he is instructed to fantasize himself a member of an audience in a theater. As he watches, it is suggested that a master of ceremonies will soon appear on the stage and will look behind the curtain. The patient is then informed that the master of ceremonies peers behind the stage curtain, then turns back to face the audience, and it is grossly evident that he is tense, anxious, shaky, worried, perspiring and in apparent "overseer's distress." It is suggested to the patient that whatever the master of ceremonies saw behind the curtain caused him to become quite upset. The patient is then told that the lights of the theater are dimming and as he watches the curtain will part and he will soon see what it was that produced so much anxiety to the master of ceremonies. In this manner the patient is put in the position of projecting from his own mind what is conceivable to him as a frightening set of circumstances. Without realizing it he will as a rule project what is uppermost and most significant to him at the time revealing unconscious traumatic areas which may have been instrumental in producing his own anxiety reaction.

Other projection devices are being developed for the patient's recognition of conflicting circumstances or other dynamic processes of emotional illness and are used often in hypnoanalysis. Most generally these are procedures that the therapist and the patient both work on while the patient is at a deep hypnotic level. At a conscious level some revelations can be traumatic for the patient, threatening his personality structure to the extent of a major setback. Therefore prior to awakening the patient, amnesias are produced or in other ways distortions are made that protect the patient from areas that are too powerful and could overwhelm him. At times the patient is called upon to help while deeply hypnotized with decisions regarding his conscious capacity to make use of and integrate the information that becomes available to him from his own deeper mental areas. As he improves during the course of treatment he may be desensitized and gradually brought to realize more fully the significance of areas within his own personality.

Another method for reaching distorted mental areas is the approach to trauma in early life by age regression of the patient. It is reported that numerous hypnoanalysts of reputable background are able to produce regression in their patients to the points of origin of mental maladjustments. Under regression the precipitating circumstances are altered and in effect ironed out. Often during the course of psychotherapy the patient may be blocked when approaching a significant emotional area. This area of resistance is usually resolved only by a time consuming process of detouring and then getting back on the original course. Hypnosis permits the therapist and the patient to penetrate directly into the area of resistance thus saving time and continuing directly to the objective by avoiding the many blind alleys encountered so often at the conscious level.

Psychotherapy is frequently used to assist the relatively normal person in his struggle to overcome the temporary effect of predominantly external pressures impinging on his ego. It is proposed by numerous investigators that hypnotic technique can be used to facilitate the patient's recovery to his former stage of normal personality integration. The physical and mental relaxation obtained during deep stages of hypnosis permits the patient to gain a new orientation, particularly if he is given control of his condition and encouraged to gain by his own efforts the relaxation and comfort secondary to his hypnotic experience. Ultimately the patient may become more independent and self contained dealing with his problems as they arise and not seeking satisfactions from a dependency relationship with the physician which would hamper the termination of treatment.

Though there are numerous uses for hypnosis in psychotherapy it has also been found to be advantageous in the field of psychiatric research. A recent article points out the development under hypnosis of experimental conflicts. While the subject is in a deep state of hypnosis a conflict is introduced by the hypnotist. Emotional distress at the waking stage and amnesia for its cause are the objective and the condition to be studied. These persons are treated for the induced neurosis by somewhat contrasting psychotherapeutic methods. Observation and objective estimates by psychologic tests following these psychotherapeutic techniques give a relative indication of the value of the method used.

The future of hypnosis in psychotherapy and in medicine judging from reported success and research in university centers and large clinics is expanding and becoming respectable by the application of objective critical research. Hypnosis in itself is an exciting tool which in the process of uncovering the mysteries of the brain and its potentialities would appear to have tremendous power perhaps even beyond our present expectation. New

methods for understanding and channeling mental forces can perhaps be devised with hypnotic technics. The intrinsic capacities of the individual human being his regenerative, defensive, and reparative psychic powers not to speak of the possibilities of dormant mental energies, would appear to be closer to our purview than ever before.

SUMMARY

For psychotherapy to be successful, the patient must desire to be helped and the therapist must exercise equal amounts of skill, patience, and objectivity. An important factor in the success of psychotherapy is for the patient and therapist to agree on, and keep in view, a realistic and attainable goal of treatment.

If skillfully used, hypnosis by shortening and simplifying treatment is a valuable aid to successful psychotherapy. The deep stage of hypnosis permits the production of such valuable phenomena as the development of age regression, recall of repressed memories, complete amnesia, and disintegration of blocking resistances. These phenomena open to the therapist critical areas of the psyche which other methods might never reveal, and permit their exploration under a kind of psychic anesthesia. In addition, psychiatric research has indicated that hypnosis may have therapeutic potentials even beyond present expectations.

CONCLUSIONS

Psychotherapy is many things. It may be specific or nonspecific, directive or nondirective, active or passive, deep or superficial. It may include ventilation, authoritarian pronouncements, exhortations, persuasion, suggestive comments, hypnosis, or none of these. It may seek to reach emotional insight, but succeed no further than intellectual insight. In the final analysis, psychotherapy is an inexact, demanding, frustrating, and highly challenging practical art.

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creased to 42. She responded to bacitracin after each attack and there was no allergic reaction. Another patient in this series was given 20 000 units of bacitracin intramuscularly two or three times a day over a period of 10 months with a total of 10 000 000 units without any evidence of residual kidney irritation or damage. Another patient took 10 000 units every eight hours for 50 days and 20 000 units every eight hours for 83 additional days with no allergic manifestations.

TABLE 1 Result following treatment

Bacitracin therapy in patient	Total number of patients	Result of treatment				
		Excellent	Good	Fair (probable)	Quiescent	Unaffected
Without attack (prophylactic use)	79		20	69	6	3
With first attack	131	41	63	79	20	7
Previously treated with this antibiotic with success	97	21	52	75	17	7
Not previously treated	34	20	11	91	3	0
Total	160	41	83	77	26	10

Note: The daily higher percentage of fluid intake especially during the period of attack was all the good results.

As a result of this series of experiences the number of laboratory tests on patients being treated with bacitracin could be reduced considerably. The daily check on kidney function was found to be unnecessary, provided the prescribed intake of fluid was maintained and urinary output was about 1 000 ml daily. Albuminuria could be expected to appear generally on the third or fourth day, reaching a low peak on the fifth to the seventh day and then subsiding. It invariably disappeared as soon as or soon after bacitracin was discontinued (In fact many of the patients in the earlier series who had shown albuminuria were brought back at that time and were found to have normal urine.) Side effects were minimal. Some patients had a loss of appetite and a few had nausea and vomiting, but this was readily eliminated by administering 25 mg of dramamine (brand of dimenhydrinate) by mouth at the time of each intramuscular injection of bacitracin.

In the meantime the producers of bacitracin continued to increase its purity, resulting in lower toxicity of their product.

In January 1952, the Food and Drug Administration found that the assay specification could be increased from 35 to 50 units per mg. Instead of the LD_{50} test for toxicity (which was not always consistent, due to different strains of mice used), a "safety" test was proposed, namely, an LD_{50} of 100 units for a 20 gram mouse.

CLINICAL RESULTS STUDIED

We were then asked by the Food and Drug Administration to carry out a carefully documented therapeutic series with hospital patients to see if these new specifications provided an adequate safeguard to permit the release of bacitracin for general use by physicians without the limitation "for hospital use only," previously required. It was decided to include in this series five patients treated with each of 12 different lots of bacitracin, four lots being provided by each of the three producers, for a total of 60 patients. This study¹⁶ was reported in 1953 and convinced the Food and Drug Administration officials that systemic bacitracin is safe.

These clinical results were confirmed at the same time by a laboratory study on the toxicity of bacitracin in rats. This study was carried out simultaneously in the Food and Drug Administration laboratories, in the laboratories of each of the three manufacturers of bacitracin, and in the Surgical Bacteriology Laboratory at Columbia University. Doses were given approximating the maximum doses used clinically and repeated in amounts five times and 10 times that dose. The results were essentially the same in all five laboratories. With the dose corresponding to that generally administered in treatment, no significant kidney changes were produced. With the fivefold and tenfold dosage, there was microscopic evidence of injury, but it was obvious that the pathologic changes were reversible and reparable.

Benemid (brand of probenecid) was used in the only death reported and attributed to bacitracin in a desperately sick endocarditis patient who had failed to respond to other measures.¹⁷ In the management of this patient the precautions recommended in the instructions (given below) were not observed, and although there was an alarming decrease in urinary output on the third day of therapy, bacitracin was continued for three more days, during which time the excretion of the retained drug was prevented by the benemid blockage in the kidneys. The action of the benemid undoubtedly increased enormously the concentration of the bacitracin in contact with the kidney epithelium.

EXPLANATION FOR DIFFERENCE IN TOXICITY

Recently Codington brought forward an explanation for the difference in toxicity of different lots of bacitracin. Craig and

(as indicated by an overnight laboratory test) the response will be prompt and favorable in a very high percentage of cases

Bacitracin for systemic use should be available to all physicians for possible use in patients with infections caused by susceptible organisms. It should not be used simply as a last resort after everything else has failed. The instructions as outlined should be closely followed. Fluid intake and urinary output should be measured daily while systemic bacitracin is being administered. Benemid (probenecid) should never be used in conjunction with bacitracin.

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CONGENITAL ANOMALIES OF THE ESOPHAGUS

FRANCIS S GERBASI *Lieutenant Commande (MC) USNR*

A GENERAL knowledge of congenital defects of the esophagus is essential, especially for the general physician, the pediatrician, and the surgeon. Familiarity with the diagnosis and treatment of these anomalies would result in earlier operations and the survival of many more infants.

Much of the interest in this subject has been stimulated by Haight and Towsley^{1, 2} who have pioneered many of the surgical developments in these conditions.

A workable classification of congenital anomalies of the esophagus, adapted from Feldman,³ Palmer,⁴ and Potts⁵ and illustrated in figures 1 through 10, includes absence or atresia of the esophagus without fistula, atresia of the esophagus with tracheoesophageal fistula, fistula without other abnormalities, such congenital conditions as stenosis, shortness, and web of the esophagus, duplications of the esophagus, and neurogenic abnormalities such as achalasia and achalasia.

Except for absence of the entire esophagus and congenital web of the esophagus, which are exceedingly rare conditions and of no practical significance, these anomalies will be briefly discussed individually.

ATRESIA OF THE ESOPHAGUS WITHOUT FISTULA

Atresia of the esophagus is relatively infrequent when compared with the number of cases of atresia with fistula that are observed. In this condition both segments of the esophagus end blindly (fig. 2). There is no sexual predilection in this anomaly. From birth these infants cough, choke, and become temporarily cyanotic whenever they are fed or attempt to swallow because the material has no place to go other than to be aspirated into the trachea. Therefore, aspiration pneumonia is a frequent occurrence. The presence of other congenital anomalies along with this condition is not unusual. Roentgenograms of the chest will often show an area of pneumonia or atelectasis, while those of the abdomen reveal no gas in the bowel. The absence of air in

From the University of Michigan Medical School, Ann Arbor, Mich. Lt. Comdr. Gerbasi is assigned to U. S. Naval Hospital, Corona, Calif.

the gut is very suggestive that no fistula exists but does not absolutely prove the absence of such a communication. One must be aware of the fact that a few bubbles of gas in the colon could have been placed there by the insertion of a rectal tube or the giving of an enema. The diagnosis can be further confirmed by passing a small catheter into the esophagus until it meets an obstruction. Then about 1 ml of lipiodol (not barium) is introduced which outlines the upper segment of the esophagus well. Precautions must be taken that the child does not aspirate the oil into the lungs for this may lead to the erroneous diagnosis of a tracheoesophageal fistula.

The earlier the diagnosis is made and the earlier surgical treatment is instituted the better the prognosis. Primary anastomosis of the two blind pouches is seldom possible because the distance between the two segments is too great and the majority of infants will not be in good enough condition to tolerate such a long major procedure. These children's lives can be saved by a gastrostomy and a cervical esophagostomy. When the child is four or five years of age an intrathoracic esophagus constructed of jejunum or the transplantation of the stomach intrathoracically with anastomosis to the upper end of the esophagus can be considered.

If the child's condition is good when first examined the stomach may be mobilized into the right side of chest. A primary anastomosis is then made between the esophageal segments. There are a number of advantages and disadvantages to this procedure and one must be cognizant of these before undertaking the operation.

ATRESIA WITH TRACHEOESOPHAGEAL FISTULA

Atresia of the esophagus with tracheoesophageal fistula is the most common congenital anomaly of the esophagus. The anatomic variations are shown in figure 3 the most common combination being that depicted in figure 3B. The diagnosis is not difficult. The accumulation of unusual amounts of mucus in the pharynx producing signs of respiratory obstruction should make one suspicious. Furthermore the regurgitation of formula attacks of choking, dyspnea and cyanosis while feeding are characteristic. The inability to pass a catheter into the stomach confirms the diagnosis of esophageal obstruction but roentgenograms are necessary to determine the exact nature of the anomaly. Pulmonary atelectasis or aspiration pneumonia, particularly of the right upper lobe is frequently seen. The presence of extra esophageal congenital defects is not unusual. The introduction of 1 ml of lipiodol through the catheter will demonstrate the type of anomaly present. The presence of air in the gastrointestinal tract of infants with this condition indicates a fistulous connection between the trachea or bronchus and the lower esophagus.

These patients cannot survive without surgical correction. The operation consists of either an extrapleural or transpleural approach to the anomalous structures through a right parascapular incision. The tracheoesophageal fistula is closed and an end-to-end anastomosis of the two esophageal segments is performed. About two thirds of the patients will survive operation. Some of these infants will develop a small stricture at the site of anastomosis which usually will respond to dilatations.

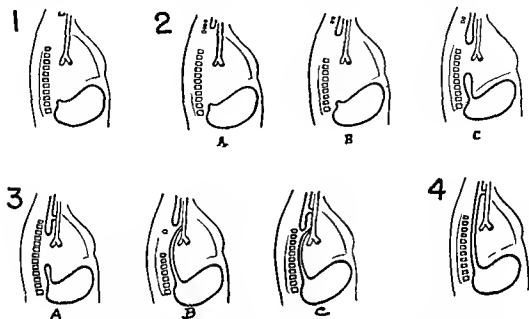


Figure 1 Absence of the entire esophagus. Figure 2 Atresia of the esophagus without fistula (A) Atresia of the entire organ with a residual fibrous cord connecting the hypopharynx and the stomach. (B) Small cul-de-sac representing the cervical esophagus without further evidence of the organ (C) The proximal and distal segments end as blind pouches which are joined by a fibrous cord. Figure 3 Atresia of the esophagus with tracheoesophageal fistula (A) The fistula communicates with the proximal pouch, the lower end is blind. (B) The fistula communicates with the distal pouch, the upper end is blind (C) Both ends of the esophagus are connected with the trachea. Figure 4 Fistula without other esophageal abnormalities.

CONGENITAL TRACHEOESOPHAGEAL FISTULA WITHOUT ATRESIA

Congenital tracheoesophageal fistula without atresia occurs infrequently and has been seen only five times at this hospital. An important fact which has previously received no comment in the literature is that the majority of these tracheoesophageal fistulas occur 2 cm or higher above the bifurcation. This is in contrast to tracheoesophageal fistulas associated with atresia, for most of these are within 2 cm of the cricoid. About one third of the fistulas occurring without atresia are near the level of the jugular notch or above (fig 4). This is most important,

for the esophagus at or above the second dorsal vertebra should be approached through a cervical incision and not through the chest. The signs and symptoms vary depending largely on the size of the fistula. A large fistula produces symptoms similar to those observed in congenital atresia with fistula. If the fistula is small the child may maintain a good nutritional status and will cough only when taking fluids or when placed in the prone position. Such a child is often hospitalized many times for recurrent bouts of pneumonia. Roentgen examinations are essential to establish the diagnosis and to determine the exact level of the fistula. The treatment, of course, is division of the fistula and closure of the divided ends. A cervical incision is used for a fistula at or above the level of the second thoracic intervertebral space. A right thoracotomy is the approach for lesions below this level.

CONGENITAL STENOSIS

In our small series the majority of cases of congenital stenosis of the esophagus occurred in male children. The onset of symptoms varied, but about 60 percent of the patients showed evidence of obstruction before the age of 15 days. This is in contrast to the experience of Holinger and associates, who had noted symptoms to appear for the first time after the age of five months. Most of these children are not seen in the hospital until they are three years of age or older. They prefer fluids to solids because the latter make them vomit. They eat slowly and masticate their food well. Vomiting of undigested food is usually effortless and not projectile. An esophogram confirms the diagnosis. The stenotic area will be seen near the junction of the middle and lower third of the esophagus (fig. 5). A small hiatal hernia frequently observed with this lesion is believed to be acquired, not due to an associated congenitally short esophagus as suggested by Kelly. Esophagoscopy is essential for this will determine the exact nature of the stenotic area and the degree of esophagitis present. The treatment should consist of five or six dilatations. If roentgenograms and esophagoscopy indicate that the stenotic area might yield to such therapy. If the stenosis recurs after such therapy the lesion should be excised and the esophagus reapproximated by an end-to-end anastomosis.

CONGENITALLY SHORT ESOPHAGUS

The congenitally short esophagus is exceedingly rare and is seldom troublesome in those infants and children in whom it is present. Most of the cases which are called a congenitally short esophagus are acquired. When symptoms do occur they result from such complications as peptic ulceration, esophagitis, and stricture formation; therefore the symptoms may be vomiting, dyspnea, retrosternal pain, hematemesis, and melena. A roentgenogram after barium will demonstrate the esophagus to be short and the stom-

ach will often appear pyramidal in shape (fig 6) There is no agreement as to the treatment in this condition Simple procedures such as a bland diet, dilatations, or a phrenemphraxis should be tried first. If these are not successful, the extensive operative procedure of mobilizing practically the entire esophagus so that the stomach may be replected in the abdomen should be done It should be recognized that if no treatment is instituted most of these patients will develop the complications already mentioned

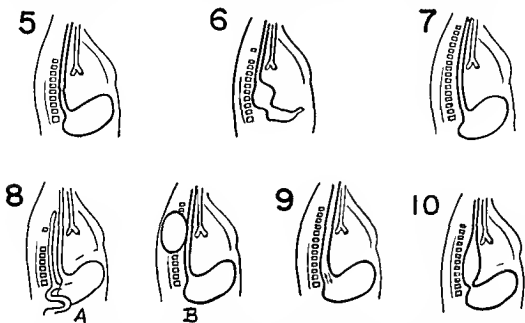


Figure 5 Congenital stenosis of the esophagus Figure 6. Congenitally short esophagus. Figure 7 Congenital web of the esophagus Figure 8 Duplications of esophagus (A) Duplication of intestinal origin (B) Cyst of the esophagus Figure 9 Chlasis. Relaxation of the cardio-esophageal junction so fluid may easily pass in either direction Figure 10 Achalasia Sharp pointed narrowing at the esophagogastric junction with dilatation above it.

DUPLICATION OF THE ESOPHAGUS

Most duplications of the esophagus are cystic structures and are either intramural or extramural (fig 8B), the latter being more common Rarely, one finds that the duplication is of intestinal origin (fig 8A) The cyst is extrapleural infrequently, its lumen communicates with the lumen of the esophagus The symptoms are variable but are usually of a respiratory nature such as dyspnea, cyanosis, or coughing The patient may also have dysphagia, vomiting and pain in the chest The cysts may produce no symptoms at all The majority of these cysts protrude into the right hemithorax and occupy the superior portion of the posterior mediastinum Roentgenologically these duplications not only produce a round homogeneous shadow posteriorly but are frequently associated with congenital malformations of the spine, especially

scoliosis and hemivertebra. The treatment of these lesions is transpleural excision.

CHALASIA

Chalasia refers to persistent relaxation at the cardio esophageal junction and is of equal frequency in males and females. Vomiting the main symptom occurs about 10 days after birth and will become progressively worse if untreated. The child is found to regurgitate most often when he is placed on his back. Dehydration and aspiration pneumonia are frequent sequelae. Roentgen studies are essential to establish the diagnosis. The barium is seen to go up from the stomach into the esophagus on inspiration when pressure is applied to the abdomen. On expiration the barium may come up into the mouth go back into the stomach or both (fig 9). Treatment consists of keeping the child in the upright position for 30 minutes or so after eating. If symptoms are severe he may have to be kept upright day and night. Usually in three or four weeks the condition corrects itself.

ACHALASIA

The sex incidence of this condition and the question of its origin whether congenital or acquired are still in dispute. In children the main symptom is vomiting while in adults dysphagia, retrosternal discomfort, and regurgitation are the complaints. Malnutrition is seldom seen in adult patients but is frequent in children. Pulmonary complications such as lung abscess and aspiration pneumonia are not infrequent. Roentgenograms establish the diagnosis. Routine posteroanterior and lateral chest films often will show a distended esophagus filled with food and fluid (fig 10). The air fluid level should not be confused with a pleural effusion. A roentgenogram after barium reveals a dilated esophagus either fusiform flask or sigmoid-shaped and a sharp pointed narrowing at the esophagogastric junction. Esophagoscopy is seldom necessary for the diagnosis of cardiospasm in children. Treatment with atropine nitrites or other antispasmodics has had generally poor results except in patients with minimal or early stages of the condition. These drugs can be tried for a week or so but if there is no response dilatations should be attempted. If this does not relieve the condition an extramucosal esophagocardiotomy should be done shortly after before secondary changes in the esophagus progress.

SUMMARY

The more common congenital anomalies of the esophagus and their diagnosis and treatment have been described in order to acquaint the practitioner with the pertinent facts of each. Such knowledge is important to early and proper diagnosis so that

surgical treatment can be instituted early and the mortality and morbidity resulting from these conditions decreased.

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RHODE ISLAND COMMENDS CAPT JOHN L ENYART (MC) USN

Capt John L Enyart (MC) USN and the staff of the U S Naval Hospital Newport were honored by a resolution passed by the General Assembly of the State of Rhode Island on 16 March 1955. The resolution reads as follows: "Commending the commanding officer Captain John Leslie Enyart (MC) United States Navy and the personnel at the United States Naval Hospital at Newport Rhode Island for precision action in coordinating the rescue work when explosion at sea upon the U S S *Bennington* last May proved that efficient organization is essential to life saving

BLOOD GROUPING DISCREPANCIES

ALBERT M RICHMOND Col 1 MC USA
FRANK W CHORPENNING L ut na t C 1 4 MSC USA
JOHN W MOOSE F t L ut na t MSC USA
GEORGE B EDMONSON F t L t t MSC USAR

TWO DIFFERENT blood group determinations for the same person have not been uncommon yet it is well established that the blood group of an individual does not change. The many likely sources of error have been stressed repeatedly. These errors are undoubtedly accentuated when mass blood groupings are performed by short-cut methods and when many different laboratories employing different techniques and antisera are involved. It has long been realized that such a situation occurs in the armed services and in certain other organizations such as those for civil defense. In spite of this a search of the literature yielded only two critical studies of the extent of such misgrouping. The more recent of these was a small restricted series. Apparently no organized program exists for searching out and correcting errors in grouping as reflected on identification tags and medical records. In the armed services there have been many local efforts in this direction but the application of such studies to standardization of techniques has been less than could be desired.

In the interests of assessing the gravity of the situation and suggesting corrective measures a broader study using the most modern techniques and antisera seemed indicated. Because the blood bank of this laboratory serves a large area and its donor source embraces both Army and Air Force units we have had an opportunity to make such a study.

SELECTION OF THE STUDY SERIES

For purposes of the study it was necessary that the series consist of a large group of American soldiers and airmen that nearly complete coverage of the group be attained and that the operation of other factors be essentially random. The only persons excluded were those whose blood group had already been rechecked by our blood bank. Units were selected at random and almost all personnel of the units were examined. In all 9,050 persons in 27 different military units were studied. The great majority of these were young men recently inducted into service from wide

spread American sources. In the main blood group records on these men depended on tests performed at induction stations and reception centers where only a simple slide technic had been employed in mass grouping. An undetermined but undoubtedly very small number had been subjected to confirmatory grouping prior to this study.

METHODS

A mobile team visited each unit at a predetermined time and collected venous blood from individual members as scheduled. A roster was prepared at this time by our personnel and a number assigned each person who was then given a tube bearing the same number in which his blood specimen was collected. At the same time the individual's identification tags and immunization register (Form 8-117) were examined and blood group data from them recorded on the roster. The blood specimens and roster were taken to our laboratory where grouping and typing tests were performed.

Each specimen was examined by the ABO blood group slide test, backtyping* technic, the slide test for Ph typing, and the Rh modified tube test. The ABO blood group slide and backtyping procedures were performed by different technicians. A test for Rh₀ variants (D^u) employing Coombs serum was performed on all Rh negative Negroids and Mongoloids except for the first 474 persons examined.

The ABO blood group slide tests were performed by placing a small drop of blood on a microslide, adding a large drop of National Institute of Health approved anti A or anti B grouping serum, and mixing thoroughly with an applicator stick. Cell concentrations approximated 10 percent. Readings were made from three to five minutes after incubation with occasional tilting of the slide, and negative slides were observed after 15 minutes before being discarded. Results were entered on the roster.

Backtyping was done by placing 0.2 ml. of the inactivated serum to be tested in a small tube and adding one drop of a known two percent cell suspension. Then the mixture was shaken thoroughly and centrifuged for two minutes at 150 g (about 900 r.p.m. in our centrifuge), after which the cells were resuspended gently and observed for agglutination.

All serums were tested against both group A, rh(cde) cells and group B, rh(cde) cells in this manner. In the event results of the ABO blood group slide test and the backtyping did not agree, a tube test also was performed and the foregoing tests were repeated. This procedure always resulted in satisfactory resolution of any discrepancy.

* In blood typing the unknown cells are typed with known serum but in backtyping unknown serum is typed with known cells.

The Rh factor slide test was performed with high titered protein fortified incomplete type anti Rh₀(D) typing serums which were specifically recommended for the slide test and had been approved by the National Institute of Health. All tests were done by placing two drops of a 40 to 50 percent fresh cell suspension in homologous serum on a microslide adding a drop of antiserum and incubating on an illuminated warming box for about two minutes. The box maintained surface temperatures on the glass plate from 40 to 45 C resulting in an estimated incubation temperature of about 37 to 39 C. Slides were tilted back and forth during incubation and observed for the presence of agglutination. If the blood was positive this usually occurred in less than one minute. If no agglutination appeared slides were kept under observation until drying began to interfere.

Performance of the modified tube test for the presence of Rh₀(D) consisted of placing one drop of typing serum in a 12 by 75 mm tube and adding two drops of a cell suspension of about 2.5 percent. Then mixing thoroughly incubating in a water bath at 37 C for 15 minutes and centrifuging at 150 g (900 r p m) from one to two minutes. Positive agglutination determinations were made by observation with the naked eye and negative results were checked microscopically.

The procedure for the D^u test was identical with that described in the pamphlet accompanying the reagent (antihuman serum for the Coombs test).

All results were entered on the roster which was then filed pending analysis at completion of the study.

RESULTS

Of the 2,050 persons examined during the study 180 or 8.8 percent were found to have a blood group different from that recorded on their identification tags. These were believed to be original errors as distinct from errors in our testing because of the careful repeat testing employed in this study and because our observed error during this same period was less than 0.012 percent. This incidence of error in our laboratory was established by checking the agreement of slide and tube testing with backtyping and with repeat testing.

In each blood group the percentage of persons whose blood was misclassified is given in the last column of table 1. It can be seen that the highest proportion of misclassifications occurred in those having group AB blood followed by those having group B or A blood. The lowest proportion of misclassifications occurred in those having group O blood.

On the other hand, the largest number of classification errors occurred in those with group A blood, and the remainder of the errors were distributed about equally among those with the other three blood groups. This same phenomenon was observed by one of us (A. M. R.) in a similar but unpublished study previously conducted in the Fourth Army area in the United States.

TABLE 1 *Discrepancies between true blood group and recorded group*

True blood group	Originally recorded group	Number correct	Number of errors	Total	Errors within group (percent)
A	A	693		693	
	O		76	76	
	B		12	12	
	AB		3	3	
Subtotal		693	91	784	11.6
B	B	191		191	
	O		20	20	
	A		9	9	
	AB		3	3	
Subtotal		191	32	223	14.4
O	O	934		934	
	A		19	19	
	B		10	10	
	AB		2	2	
Subtotal		934	31	965	3.2
AB	AB	52		52	
	A		13	13	
	B		10	10	
	O		3	3	
Subtotal		52	26	78	33.3
Total		1870	180	2050	8.8

Blood of 2050 persons tested in our laboratory and compared with the group recorded on the identification tag.

A determination as to what proportion of the observed grouping errors were due to clerical mistakes would be of great value. Such a mistake, once made, is difficult to trace. It was possible to examine the records of persons in this study for clerical discrepancies between the information on the register and on the tag. There were 10 such discrepancies, five appearing to be errors on the tag and five on the register. Those could be expected to repre-

sent only a portion of the total clerical error because many would have been previously corrected and errors made on both records could not be detected

TABLE 2. Distribution of errors in Rh typing and coded typing

Group	True Rh typ	Originally recorded Rh typ	Number of errors
O	-	-	6
Subtotal			11
A	-	-	5
Subtotal			1
B	-	-	6
Subtotal			1
Total			18

Rh factor only			
Rh typ	Recorded typ	Number of errors	Percentage
Rh pos	Rh pos	11	
Rh pos	Rh neg	7	
Total		18	7

Based on 256 personnel who were typed in our laboratory. Positive and negative Rh typing determined with the D typing unit.

Because of the practice of performing Rh typing within the Air Force these data also were collected. The Rh type was included in the records of 256 members of the study series (2050). Among these differences between the recorded type and our results occurred in 18 instances or seven percent. These errors had no correlation with the grouping errors but rather the greatest incidence was correlated with the group showing the greatest frequency (Group O). The distribution of error is shown in table 2. The sample is of insufficient size to determine the incidence of any specific kind of discrepancy.

DISCUSSION

The extent of blood grouping errors in Army and Air Force troops can best be assessed by examining the data recorded on identifi-

cation tags and ascertaining the distribution of error among the various blood groups. The advisability of having the blood group recorded on the identification tag is not within the scope of this study, but if it is, the correct blood group obviously should be recorded.

If the percentage of errors were reasonably low, or if properly selected universal donor blood were to be given the current situation as reflected by this study would be of little importance. Because, however, about one in every 10 persons has an erroneous entry on his identification tag (table 1), and there is no assurance that universal donor blood always will be available in sufficient quantities, definite steps should be taken to correct the situation.

TABLE 3 *Incidence of blood grouping errors compared with the frequency of the group*

Blood group	Frequency (percent)	Number of errors	
		Observed	Expected
A	38.2	91	68.8
B	10.9	32	19.6
O	47.1	31	84.8
AB	3.8	26	6.8
Total		180	180.0
$\chi^2 = 103.26$			

Based on the correct percentage distribution (frequency) of blood groups in the entire series (2,050)

If the factors governing misclassification were operating in the same manner regardless of the true blood group involved one would expect the 180 misclassifications to have been distributed among all blood groups in the same proportion as correct classifications were distributed. The observed and expected distributions are presented in table 3. Applying the chi square (χ^2) test to this data, a value of 103.26 is obtained. With three degrees of freedom, this indicates that there is little probability of obtaining the observed distribution of error among the various blood groups due to chance alone, and that causes other than random ones are responsible for the observed difference. Further misclassifications within a group have not been distributed uniformly among the other three groups. For example, of the 91 persons with group A blood misclassified, 76 were now assigned to group O, 12 to group B, and three to group AB. Were the misgrouping merely a matter of chance, it would be expected that the mis

classified persons would have been assigned to groups as shown in table 4. Again the values of χ^2 indicate there is little likelihood that many of the grouping errors were due to the same random causes such as clerical errors. Undoubtedly careless observation and clerical mistakes contribute to the total error because the only way that a true group A blood could be classified as group B blood would be if cells bearing the A agglutinin failed to agglutinate with anti A grouping serum while simultaneously yielding false agglutination with anti B grouping serum. This is a rather remote probability. Including both groups A and B a total of 21 errors could belong in this category which is 11.7 percent of the total error observed.

Far fewer errors occurred in the classification of those with group O blood (table 3) than would be expected from a chance distribution of errors (observed 31, expected 84.8) while the reverse is true in those with the other three blood groups. The fact, however, that some errors in classification of those with group O blood did occur requires exploration of the possible causes. Because the identification of blood as belonging to group O is dependent on the absence of agglutination, misclassification of those with group O blood must be attributed to false agglutination or clerical error. The latter especially if lower case letters (a and o) were used either in marking slides or in recording results could cause a correctly grouped O blood to be recorded as an A or vice versa. Clerical errors involving lower case a and o appear to be negligible because if there were many errors of this sort one would expect to find a significantly higher proportion of group A blood samples than of group B blood samples misclassified as group O. Although the proportion of group A samples was greater than that of group B, the difference is not significant. Hence misclassification of group O blood samples must be due principally to false agglutination.

Agglutination or what appears to be agglutination of group O blood may occur due to autoagglutination, bacterial contamination, rouleaux formation or clotting, thus causing a true group O blood to be identified and recorded as group A, B or AB blood. All of these causes could have been involved and there is no evidence definitely pointing to any particular one. It seems unlikely that bacteriogenic agglutination could have been a significant factor because blood samples were fresh and antisera were used up rapidly and not allowed to become old. There is a theoretic reason to suspect clotting because mass methods use unclotted peripheral blood without adding an anticoagulant. Also these preparations are prone to drying.

It is seen in table 3 that failure to detect agglutination occurred much more frequently than would have been expected on the basis

of chance. This fact alone is of importance in arriving at appropriate recommendations for the future reduction of mass grouping errors. It becomes clear that a greater number of the errors were due to failure to observe agglutination than were due to all other causes together. There were 76 group A bloods and 20 group B bloods recorded as group O, in addition to which 26 group AB bloods were misclassified, making a total of 122 errors (67.7 per cent) attributable to failure to detect agglutination.

TABLE 4 Incidence of blood grouping errors within blood groups

True blood group	Originally recorded group	Number of Errors		χ^2
		Observed	Expected	
A	O	76	30.4	104.05
	B	12	30.3	
	AB	3	30.3	
Total		91	91.0	
B	O	20	10.7	13.80
	A	9	10.7	
	AB	3	10.6	
Total		32	32.0	
O	A	19	10.4	13.81
	B	10	10.3	
	AB	2	10.3	
Total		31	31.0	
AB	A	13	8.7	5.97
	B	10	8.7	
	O	3	8.6	
Total		26	26.0	

A summing chance of random distribution and other than technical causes alone.

It is evident, therefore, that a very large proportion of the errors currently being encountered could be prevented if the factors which inhibit agglutination were eliminated. These are hemolysis, use of weak antisera, and insufficient cell contact.^{1, 2} Because the incidence of hemolysis is not high and because actual tests in this laboratory have shown that antisera currently used in the armed services are very potent, it is believed that lack of sufficient cell contact is the most likely cause. In our laboratory

we have observed that failure to secure adequate cell contact by frequent tilting of the slide and by a sufficiently long period of incubation can result in agglutination being missed. A knowledge of the mass methods usually employed coupled with the foregoing leads us to conclude that most of the errors observed were likely caused by improper technic such as too rapid reading or insufficient tilting of the slide. A great part of this is inherent in the use of mass techniques and poorly trained technicians. Therefore modification of the technic to assure more careful incubation and better indoctrination of technicians are essential if the situation is to be improved. Another approach would be to initiate a program of repeat testing.

SUMMARY

In order to determine the extent of blood grouping errors resulting from the employment of mass techniques the blood of 2,050 American soldiers and airmen who were selected essentially at random was examined. The blood groups were determined by carefully confirmed testing and the results compared with previously prepared records. Discrepancies between our results and those previously recorded occurred in 180 instances or 8.8 percent.

Most of the grouping errors (67.7 percent) seemed to be due to failure to observe agglutination with potent specific antisera even though the agglutinin was later proved to have been present. It is suggested that this was probably due to too rapid or careless reading and insufficient tilting of the slide.

It was possible to examine the blood of only 256 persons for Rh type discrepancies because such information had been included in the records of only that number. Of these 18 (seven percent) showed recorded errors in Rh type.

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FREE AMINO ACIDS IN THE BLOOD AND ORGANS OF MICE IN SHOCK

VICTOR ROSS *Pb D*
DAN H MOORE *Pb D*

SEVERAL investigators have demonstrated that a rise in total amino acid nitrogen occurs in blood following induction of shock by hemorrhage,¹⁻³ by scalding⁴⁻⁷ and by clamping,⁸ and that the rise is greater with increasing severity of the state of shock.^{2, 3, 9} This has been ascribed to increased protein breakdown in the peripheral tissues and a failure of the liver, during shock, to deaminate and to assimilate amino acids.² While it has been observed that the total amino acid nitrogen in the liver and muscle also increases during shock (from hemorrhage),¹⁰ study of the individual amino acids in the tissues of shocked animals appears to have been limited to the blood of the scalded rat.¹¹

The present investigation was concerned with the amino acids present in several organs, as well as in blood of mice in a state of shock produced by scalding. Quantitative measurements were not made, the primary interest being whether the tissues of scalded mice would or would not contain amino acids not present in the corresponding tissues of normal mice as revealed by chromatographic examination.

METHODS

Groups of C57 black mice weighing 25 grams each and up to 25 in number in each experiment, were fasted 20 hours and anesthetized with ether. Both hind legs and thighs were submerged in water at 70° C for 10 seconds and the animals then held at 35° C for two hours. The mortality was 50 to 60 percent. All survivors were in a state of severe shock. After anesthetization the blood was collected and allowed to clot, the organs were placed in beakers held in a mixture of alcohol (ethanol) and solid carbon dioxide. Control mice were treated similarly except for the 70° C and 35° C exposures. Only two to three drops of blood

From the Departments of Biochemistry and Microbiology, College of Physicians and Surgeons, Columbia University, New York, N.Y. Dr. Ross is now at Fort Detrick, Washington, D.C.

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were obtained from each shocked animal compared with nine to 11 drops from each control.

For the extraction of amino acids serum was diluted with four volumes of absolute alcohol let stand over night in the ice box, and centrifuged. Weighed quantities of dried tissues were extracted with anhydrous ether followed by anhydrous alcohol to remove lipids. Amino acids were then extracted by grinding in 80 percent alcohol. While some loss may have occurred in the course of removing lipids these are assumed to have been alike for control and treated animals tissues because the operations were identical.

Two-dimensional chromatograms were employed according to Dent's adaptation of the method of Coosden and associates¹¹ the equivalent of 0.10 ml. of serum and of 7.5 mg. of dry tissue being spotted. Dent's map of spots was used to help identify the spots and in addition the following compounds singly or in groups, were examined by themselves or after being added to tissue extracts in order to make identification more certain: aspartic and glutamic acids, glycine, serine, alanine, asparagine, glutamine, leucine, valine, tyrosine, tryptophan, phenylalanine, histidine, histamine, glutathione, proline, carnosine, lysine, hydroxylysine, arginine, threonine, diaminopimelic acid, taurine, beta alanine and ornithine. All operations from spotting to final examination of the paper chromatograms were carried out simultaneously for control and experimental extracts of a given tissue thus facilitating an estimate to be made of the intensities of the colored areas obtained by spraying with ninhydrin. These estimates are not to be considered as possessing quantitative accuracy they are included to supplement the qualitative data showing the particular amino acids observed to be present in a given tissue and to illustrate a rise in concentration in a number of them following scalding.

RESULTS

Table 1 lists the amino acids and related compounds which were found in the various extracts. The estimated intensities are the averages of six experiments in the case of serum and of three in the case of the other tissues. Additional experiments were done but were not included because one or more amino acids had been added as markers their inclusion would not alter the results.

The concentration of glycine in blood from the group of shocked mice was 69.0, 104.5, and 83.4 mg. per 100 ml. The average value for the control mice was 47.1 mg. per 100 ml. with the value differing by more than 1.5 mg. from the average.

*Suggested by Dr. James R. W. George of the Rockefeller Institute for Medical Research.
 †Dr. L. D. W. George of Sharp and Doherty, particularly.

TABLE 1 *Free amino acids in serum and organs of mice*

	Serum		Spleen		Liver		Kidney		Brain		Muscle		Lung	
	C	S	C	S	C	S	C	S	C	S	C	S	C	S
Alanine	4	6	5	7	6	6	5	6	5	5	5	5	4	4
Alpha aminobutyric acid			x	x	2	2	1	2	<1	<1				
Arginine			2	3					2	2	1	2		
Aspartic acid	1	1	5	5	2	3	3	3	5	4	3	3	3	3
Beta-alanine			x	x	1	2	1	1						
Carnosine											2	1		
Ethanolaminephosphate ester			5	6	2	2	x	x	3	3	1	1	4	3
Gamma aminobutyric acid									7	7				
Glutamic Acid	3	5	6	6	5	5	5	5	6	5	5	5	6	5
Glutamine	5	6	4	5					4	3	4	4	3	3
Glutathione			x		1	1								
Glycine	3	3	5	6	5	5	5	5	5	5	4	4	5	5
Leucine	3	4	6	6	3	4	5	5	5	4	2	4	1	1

TABLE I f m d m d g a f m —Co u d

	S u m		Spl	L	K d y	B	M scl	L g
	C	S	C	S	C	S	C	S
L y	2	3	3	4	2	2	3	4
M th			1		3	4	x	1
O th			x	x				1
P r l i			3	3	1	1	x	
S	1	3	6	6	1	2	4	2
T u r n	4	5	6	6	5	5	5	5
T h o			3	5	1	2	2	<1
T y n	1		3	3	1	1	2	<1
V l	3	4	4	5	2	4	3	<1
A d u r	C		S h k d m		g 7 t y R		g u l y	
l t y f e 2 f	h m d		5 m d		G			
A b l k p	d d t a h		3 l i g h 4 l		p w			

Serum Tyrosine was absent from the chromatograms of normal mice and present in those from the scalded animals. All the amino acids present in serum, namely aspartic and glutamic acids, glycine, serine, alanine, lysine, leucine, valine, threonine, and glutamine, were present in all the other tissues as well, except that glutamine was absent from liver and kidney.

Spleen Glutathione was present irregularly in extracts of the spleen from control animals but was never seen in those from shocked mice. A spot in the position of methionine sulfoxide* was always present in the former but irregularly in the latter. Other compounds in addition to those detected in serum were threonine, tyrosine, arginine, proline, beta alanine, alpha aminobutyric acid, ornithine and ethanolaminephosphoric ester. The last yielded a spot in chromatograms of splenic extracts which was stronger than in that from any other organ.

Liver Threonine, which appeared irregularly in extracts from control animals, was regularly present in those from scalded mice, while proline and ornithine, which were not found in the control extracts, were detected irregularly in the experimental animals. In addition to the compounds found in control serum, threonine, tyrosine, beta alanine, methionine sulfoxide, glutathione, alpha aminobutyric acid, and ethanolaminephosphoric ester were present in liver extracts.

Kidney The chromatograms of this organ extract from control and scalded mice were similar. The compounds detected in control kidney tissue were the same as in control liver tissue except that the former contained no glutathione and did contain proline. Neither glutamine nor arginine could be demonstrated in kidney and liver extracts. Except that arginine was also absent from lung extracts this was in contrast to all the other organs examined. The absence of these two compounds may have been the result of strong arginase and glutaminase activity. The latter enzyme however is present in brain also and a spot for glutamine was always present in chromatograms of this organ. Arginase activity should have been reflected in the appearance of ornithine but this acid was not found in kidney tissue from control or scalded mice nor in normal liver tissue, although it was present irregularly in liver from scalded mice. Schwerin and co-workers¹⁴ found 10 and 35 mg of glutamine per 100 grams of mouse kidney and liver, respectively, the quantity in the latter

* Methionine sulfoxide was probably formed from methionine during the potting operation. Crumpler and associates (Crumpler, H. R., Dent, C. E., Harris, H. and Waller, G.) β -methyl tyrosine (2-methyl β -alanine) was amino acid obtained from human urine. *Nature*, London 167, 307-308, Feb. 1951 reported finding a new amino acid β -methyl tyrosine in the position occupied by methionine sulfoxide. It is possible therefore that the new compound rather than methionine sulfoxide was present in our chromatograms.

organ when calculated for that spotted in the present experiments should have been detected

Brain The chromatograms of control and shocked mice were qualitatively indistinguishable. Besides the compounds detected in normal serum there were observed spots representing threonine, tyrosine, arginine, proline, alpha aminobutyric acid, gamma aminobutyric acid and ethanolaminephosphoric ester.

Leg Muscle The patterns of the two groups of animals were alike. Besides the amino acids seen in serum chromatograms there were threonine, tyrosine, arginine, proline, methionine sulfoxide, ethanolaminephosphoric ester and carnosine. Carnosine exerts a depressor effect on blood pressure¹¹ but it appears to play no role in shock because it was not found in the blood of scalded mice.

Lung Tyrosine and threonine were absent in control extracts but appeared in those of scalded mice. Except for methionine sulfoxide and ethanolaminephosphoric ester the extracts from control mice yielded the same chromatograms as those from serum; this made the resemblance to serum greater than that in any other organ.

DISCUSSION

Only in the serum where tyrosine appeared and in the lung where both tyrosine and threonine were found in the shocked mice does there appear to have been a qualitative change in the free amino acid pattern following induction of shock. The meaning of these changes is not clear at this time. The simplest explanation may be that the concentration of these two amino acids had increased sufficiently to make detection with ninhydrin possible. This view receives support from the fact that there were a number of instances in which the concentrations of amino acids increased in the tissues of the shocked mice. An exception to this is the brain where in the case of six compounds the concentration decreased. No amino acid regularly present in control tissue was lacking in the corresponding tissue from scalded mice.

It is of interest that no spot, other than those representing glutamine and carnosine present in chromatograms of unhydrolyzed specimens, failed to appear after hydrolysis of the tissue extracts from either the control or the scalded animals. Although ninhydrin does not detect all peptides, the fact that there was also no evidence for intensification of the color of any spots (except as expected from the hydrolysis of glutamine and carnosine) suggests that, if peptides soluble in 80 percent alcohol were present in the extracts, they must have been so in very small amounts. This suggests that such compounds also do not play a part in the shock syndrome.

SUMMARY

Only in blood and lung extracts was there a qualitative change in the free amino acid paper chromatograms of scalded mice. This consisted in the appearance of tyrosine in the former, and of tyrosine and threonine in the latter.

In no case was an amino acid observed in the control animals' tissues which failed to appear in the chromatogram of the corresponding tissue from scalded mice.

Hydrolysis of the extracts provided no evidence for the presence of peptides in the extracts from control or shocked animals' tissues. It appears therefore that carnosine and other peptides play no part in shock produced by scalding.

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MILITARY PSYCHIATRIC PROBLEMS IN PEACETIME

L. EITINGER M.D.

MILITARY psychiatric problems are so extensive that in a brief report one can only indicate the most important points of interest. I have therefore concentrated exclusively on concrete and simple problems encountered daily in the Norwegian military service and in this clinic.

Since the beginning of our military age responsible military leaders have made the reasonable demand that the men who were to bear the direct strain of battle and life in military service be in relatively satisfactory health. Parallel with the building up of modern armies the medical selection system has also developed systematically. Concentration has been on the soldier's physical soundness. Although symptoms such as anxiety and panic were known in former times professional military men were primarily interested in knowing whether or not the soldier had good feet and full movement of his fingers in order to fire a rifle. It did not occur to anyone to correlate these problems in selection board examinations. The very alarming number of cases of nervous breakdowns, shell shock, et cetera during two world wars made the problem exceedingly real. It was only natural that ways of avoiding these breakdowns were urgently sought. Because psychiatric therapy was inadequate emphasis was placed on prevention as early as possible, i.e. before service began. This led in the first place to a more or less noncritical rejection of all recruits who showed even insignificant symptoms.

It is not strange that such rigorous demands met with some resistance especially after the war when it became evident that even the most select soldiers could experience breakdowns. In 1943 when the military services of the United States still rigorously rejected all recruits with the slightest indications of nervous symptoms Sjögren pointed out that it was not only those who were already psychically strained who broke down but that the milieu—military life itself—played a big part both in a positive and negative direction. Since then American studies

F m h P y h i a C l i n i c f h O l U n i t y V a d n, O l N r w y d h e
N w g s J M i l i t a r y M d l S e r v
A d p d f m o d u c t r y l c u r g h S c a d i a M i l i t a r y M e d l
C o g r O l 11 September 1954

of the problem, such as made by Sharp,² Aita,³ Egan,⁴ Chambers,⁵ Braceland⁶ and Menninger⁷ showed that too many recruits had been rejected who could have rendered valuable service in the military forces

In spite of this recognition, it is indeed unquestionable that a psychiatric opinion and appraisal at the selection board examinations can be of great value. It is only necessary to be a bit cautious concerning the standards set up

STANDARDS OF COMPARISON

Instead of trying to eliminate all those who in any way might become mentally ill during service, emphasis now is chiefly on the obviously unfit. Hamburg and associates⁸ examined 96 soldiers who were admitted to the psychiatric department in the course of their first 30 days of military service. By comparing these 96 with a group of soldiers who had at least one year of uninterrupted service, significant differences concerning earlier sicknesses, especially of a psychiatric nature, and adjustment to the working life were discovered. This corresponds fairly well with my study in 1953 of 439 soldiers who were at the conclusion of their period of service without having had to apply for psychiatric assistance and 165 soldiers who either had been admitted to this clinic or had been examined in the outpatient department (table 1)

As noted in table 1, there are quite distinct differences in the group with a positive family history (i.e., children who have not grown up with their parents—because of divorce or for some other reason, and children with parents from a rather difficult milieu—the father an alcoholic, et cetera). Furthermore, we find differences when the difference concerns "positive premorbid personalities" (i.e., all who have had nervous disturbances as children or adolescents, registered by their sensitiveness, hypersensitiveness, or isolationistic and autistic tendencies), poor school marks, unstable working conditions, and perhaps some lack of social responsibilities (if one is willing to recognize children born out of wedlock as a proof of such weakness). Factors which are alike for both the examined groups are the person's place in the family, the parents' occupation, and the number of military punishments the person has received.

SIGNIFICANCE OF PEACETIME ADJUSTMENT

Cavanagh and associates also came to similar conclusions. They compared a group of 242 military persons who (during peacetime conditions) completely failed in their work with 410 military persons without psychic or disciplinary difficulties. Those from the former group came from broken homes more often than those in the control group. The "problem" group had had several adjustment difficulties in school and working life and had, on an aver-

age a lower intelligence quotient than the control group. In spite of these undoubtable quantitative differences between the various groups examined the results hardly give any definite grounds on which to base a reliable selection procedure.

TABLE I

Factor	Normal material (439 subjects)	Problem group (165 subjects)
	P	t
Ill gestational birth	29	36
Hereditary predisposition	47	430
Paternal family history	207	636
Paternal prematurity	104	818
School difficulty	21	151
Unstable working conditions	68	375
Having illegitimate children	06	24
Not present at selection board	65	321
Total	439	165

Statistics explained from

No one can in all earnestness demand that *everyone* liable to be called up for military service with positive symptoms of a disturbed family life, unstable working conditions, or poor school marks, for example, shall be rejected and considered incompetent for military service. Neither should a candidate be rejected because he volunteers the information that he is sensitive and/or emotional. On the contrary, one should undoubtedly accept for service the subjects in whom one finds an accumulation of several factors, likewise those with distinct nervous disturbances should be accepted but followed with the utmost care.

Briefly to sum up the results one must acknowledge that the psychiatrist's importance in the actual selection board conclusions (rejected or accepted) is not as great as originally supposed. The main point I want to clarify is that the major effort of preventive work should not be performed during the selection board sessions but at a later date, that is during the military life of the individual serviceman.

BASIC NEEDS v. MILITARY DEMANDS

It is hardly necessary to stress the importance of satisfying the individual's biological and social needs. When it applies to

the former, there has never been any doubt of their importance for the soldier's competence. Here I will call to mind the old Norwegian proverb that "no one becomes a hero who has no food and drink." When it comes to social requirements the realization of their importance for the individual's welfare has been considerably more of a problem. Without hurting anyone's feelings one can safely say that the military institutions never have been especially famous for considering the individual's special capabilities and talents. This inflexibility in considering each person will undoubtedly lead to failure in satisfying specific social needs. This weakness can most certainly be the main cause for releasing or conditioning the outbreak of nervous disturbances.

From the previously mentioned examination of 604 soldiers, it was observed that a number of fairly important social requirements had been neglected by the military authorities.

THE RECRUIT'S VIEWPOINT

Let us focus our attention on the first impression of the armed services that a recruit gets his first day. Only 19 of the 604 said that they had received a good first impression. More than one third of this group informed us that the attitude of officers and noncommissioned officers which was unsympathetic, was the main reason for this judgment. A similarly large number also reported that they had not received any explanation whatsoever concerning the meaning of military service or why they had to carry out the different orders. Of those who considered that they had received some sort of explanation, nearly 80 percent said that the briefing was insufficient because it usually only referred to the importance of strict military discipline or to the threat of punishment.

Some understanding as to whether the servicemen believed that they had been justly or unjustly treated was obtained by determining their outlook on the punishment they had received and by evaluating answers to questions as to whether their sense of justice had been injured during service. The number who considered that the punishment was unfair ranged between a few up to two thirds in the different military services. Only about 10 percent reported that their sense of justice had not been injured. The two things to which the soldiers reacted most strongly were (1) being disciplined by somebody who was not a neutral judge, and (2) being punished collectively for the wrongdoings of other persons.

RECOGNITION FOR GOOD DEEDS

Most of the servicemen reported that they were reprimanded when they made mistakes but never praised when they did things

well However most of them realized that too many compliments only did harm At the same time they pointed out the poor psychology in the fact that they were treated too harshly and severely in the first period of their recruit training when they were young timid and unsure During this particular period of elementary drill and weapon exercises a few compliments and words of encouragement would have meant a great deal to their morale and feelings and would have been of the greatest importance

Only from six to 30 percent of those examined (which varied within the different services) considered that the civilian population thought well of men in uniform The lack of social recognition was perhaps a great frustrating factor and appears to be a more serious problem than one would imagine from the very positive attitude that most of the newspapers seem to express

IMPORTANCE OF JOB SATISFACTION

One of the most important social factors is certainly one's satisfaction with one's own work For service personnel this problem is definitely greater than in a civilian occupation because they find themselves in an organization where accomplishment of the imposed work is compulsory This situation implies a very serious frustration If in addition the work seems meaningless the dissatisfaction is naturally much worse to bear than under free conditions

Our studies revealed the unpleasant facts that from 20 to 40 percent of the men were far from satisfied with their training from 10 to 60 percent were dissatisfied with the work they had to do and from 80 to 100 percent (which varied in the different services) believed that the time spent in uniform was too long in relation to what they actually learned

These examples of which one could name many more illustrate and sufficiently prove my thesis that the services do not consider seriously enough the importance of social well being and contentment.

INCIDENCE OF PSYCHIATRIC BREAKDOWNS

The number of psychiatric cases in the military services must be considered to have increased since 1945 This is first and foremost because of the longer compulsory service period and possibly also because of stricter classifications and more assignments by the selection board committee This assertion might seem contrary to my claim that the psychiatrists have gathered insufficient evidence to eliminate candidates who might suffer a breakdown This contradiction meanwhile seems apparent only because so many other absolutely necessary psychological requirements—which are needed and lead to success in the service life—were lacking A published work by Hunt and associates

—which analyzes in detail 537 "marginal psychiatric cases" studied during the entire period of military service—is very convincing. These men managed to complete their military service but during the whole time they were a somewhat greater liability for the medical service and the welfare and combatant officers than the average soldier.

It is here that I have to touch upon the crux of the problem. Both the medical staff, the members of the welfare organizations and, last but not least, the combatant officers who have daily contact with soldiers and sailors need a certain amount of mature experience, understanding, and perhaps a little more of the right spirit and human touch to handle these somewhat different personalities in order to help them through their entire service period.

Evident shortcomings on these important qualifications are shown by our material—the 165 military persons who were either admitted to the University's psychiatric clinic or were treated at the clinic's outpatient department.

TYPES OF PSYCHIC DISTURBANCES

The first thing one notices when studying the diagnoses of these patients is that victims of circumstances and depressing conditions are more frequently represented in this group than in a proportionate control group. Neuroses and psychogenic disturbances constitute a good 60 percent of all diagnoses. The remainder—that is, not even 40 percent—is divided among the other diagnoses which include psychopathies, oligophrenias, schizophrenias, epileptic disturbances, et cetera.

Meanwhile, more important for our purpose than the actual academic diagnostic classification is the question of whether the actual disturbances have been caused by, conditioned by, or are unconnected with the military service. This grouping was undertaken on the basis of a detailed study and judgment of the patients' premorbid personality, adjustment to school and working life, the development of the illness, and adjustment to military and/or civilian life *after* the conclusion of treatment.

Classification of a patient into one of these three categories was not always easy to perform. In many instances there were strong objections against placing a patient in either the one or the other group. It is very difficult to decide the causes of psychiatric disturbances because numerous and very complex factors in a serious ensemble can produce mental disharmony. Meanwhile, the question of military service as grounds for psychic disturbances is of such great importance both psychiatrically and socially that I believed I was justified in undertaking this classification. This is only mentioned to point out that in each particular case I have honestly tried to come to a tenable conclusion.

MILITARY SERVICE AS CAUSE OF MALADJUSTMENT

The first group *i e* the group in which the military service was the *direct* cause of psychiatric disturbances proved to be the smallest, comprising only 12 (7.3 percent) of all examined. Here are boys who have adjusted themselves well in school and working life and who have neither in childhood during adolescence nor in the beginning of their military service had difficulties of any kind. Because of a specific experience or erroneous employment a defect appeared in their psychologic resistance with the result that failure of adjustment and neurotic reactions became evident.

For practical purposes in military medicine and especially in the preventive field it is interesting to know what factors led to the breakdown of these 12 military persons. With the reservations previously mentioned it can be maintained that two developed their depressive neuroses because of punishments which they considered extremely unjust. With six patients the problem of wrong employment was the main cause. Three thought that the officers' uncomprehensive attitude was the cause of their difficulties while one apparently reacted to the civilians' dismissing attitude in a (from his point of view) rather notorious garrison town.

Concerning those patients in whom wrong employment had been the cause of the neuroses it was particularly interesting to follow them after the final treatment. Everything went well when the military authorities followed the clinic's advice concerning a change in employment. In cases where our advice was not taken the neuroses were accentuated and after a while the patient was discharged as inaccessible for therapy.

A typical example for the first group is a 21-year-old youth in the Navy who before the psychiatric examination and treatment had had five disciplinary retributions for different offenses. He was restless, sleepless, continuously at the doctor's office, could not concentrate, was pining away and depressed. After being put into a new job he accomplished his work well without once having to consult a physician or coming into conflict with his superiors.

Even if this group where one with relative certainty can assume the cause to be military conditioning is relatively small it shows with all desirable clarity that the treatment cannot only be purely psychiatric but that it must be combined with administrative effort on the part of the military.

OTHER CAUSES OF MALADJUSTMENT

Group two (63 persons *i e* 38.2 percent) comprised men in whom military service was not considered to be the cause of the psychiatric disturbances under consideration. This group constituted more than one third of all examined and can be divided into

two main subgroups (1) the persons who should not have been enlisted in the military service (mainly psychopaths and oligophrenics), and (2) persons in whom the developing factors had nothing to do with the military service but were mainly of a social or erotic nature. In addition there were a few cases of typical "endogenous" nature (schizophrenia and organic mental disturbances) where one must assume that the illness would have developed independent of the person concerned being in or out of the service.

In itself, it is not surprising that soldiers also can have conscious or unconscious conflicts *without any connection* with the military service. For these conflicts the servicemen need, just as other patients, psychiatric treatment and guidance. Each case should be judged individually and a general recommendation to send the patients home cannot be considered a rational and adequate solution for all these illnesses of clear psychiatric nature.

The last and undoubtedly most important group was made up of 90 military persons, i. e. 54.5 percent of those examined. In this group we had, after examination of the case history, received the impression that the military service was only a contributing but still very important factor in producing the psychical disturbances. Diagnostically we find here that more than two thirds of the examined are suffering from neuroses and psychogenic disturbances. The reason for failing to adjust themselves seems in all cases to have a direct bearing on the military life. The personalities injured were on the average predisposed because their characters were affected by autistic tendencies and the like. Family disposition in the form of heredity and/or of a disharmonious home was also found to be overrepresented in this group.

Of these 90, 34 were recommended to be discharged, 38 were retained in their service and 18, in whom the final decision was postponed, were for the time being discharged and classified as temporarily unfit for service.

IMPORTANCE OF ADMINISTRATIVE DISPOSITION

We found that in the first group the administrative authorities' decisions with regard to employment were of great importance. The problem of correct assignment is even more significant with persons who are less capable of resistance. The administrative authorities should attempt to assist these cases with supporting and upholding psychotherapy, and with other positive efforts which each separate case indicates.

A typical case history of a patient concerns a seaman whose father was a drunkard and whose mother died when he was six years of age. The father married again but the stepmother also died when the boy was comparatively young. The patient developed a sensitive and emotional disposition with a tendency toward depression. During military

service he was obliged to marry and his wife continued to live with her parents. He experienced a number of neurasthenic symptoms: felt weak, was listless, tired, hypersensitive to noise, et cetera. He also complained that his father now lived alone and that this would result in a complete alcoholic relapse. The patient believed that this also would be his fault. Fortunately it was possible to arrange for him to be posted near his father (and wife). The medical officer not only kept his eye on the patient but also on the father, and at the same time he tried to help the family socially. The combined psycho and sociotherapy had a very good result not only for the effect on his military service but first and foremost for the patient's psychological health. (There is no doubt that a physician with less interest in the patient and his unit could not have accomplished the same results.)

Unfortunately there are numerous examples which prove that failure in the social medical service after psychiatric treatment results in the individual continuing to feel like a misfit as shown in the following case.

The patient was born out of wedlock and grew up with his maternal grandmother. The mother was nervous and a cousin of hers was psychotic. The patient himself was quiet, reserved, shy, restrained and had difficulty in making friends.

He was called up for military service where things went relatively well in the recruit school and at first when he was serving in the vicinity of his home. He was then assigned to another garrison and in the course of four or five months he was penalized eight times in most instances because he simply walked off. He was sent for psychiatric examination after nine months of service. He was then testless, shy, blushed when anyone so much as looked at him, slept badly, was frightened and pined away to the utmost. We recommended either a change of duty or complete release from further military service. Neither of these recommendations was followed. On inquiring we learned that the patient was still in the same post and that he spent most of his service time sitting behind bars.

CONCLUSIONS

What conclusions can be made from this rather meager material? In the first place the fact that there is so little material is in itself noteworthy. It shows that only a few of all those who need psychiatric assistance are referred to specialists. In a study made in 1950 of military persons who had been discharged because of psychiatric disturbances, only about 20 percent of the men had been examined by specialists. This figure supports the necessity for more psychiatrists in the service.

In the second place the material shows that a neurotic disturbance arising during military service does not necessarily lead to a decision of incompetence and therefore discharge. In other

words psychiatric examination and treatment can give quite a recruit-preserving" result.

In the third place, we find that it is not sufficient only to treat the men in a hospital, consequently removed from the conflict-developing milieu, without also attempting to modify the milieu. As a slogan and expressing matters to the extreme, I would say it thus: It is of no avail to fit a man into military service if one does not also seriously attempt to fit the military service to the man.

The latter is the military psychiatrists' most important problem: prevention of neuropsychiatric disturbances. Some points which affect this question are mentioned briefly.

The actual changeover from civilian to military life involves in itself many difficulties. This applies especially in a democratic society in which education stresses the development of the individual's freedom and his personal responsibilities. The atmosphere in and the whole construction of the military organization is contrary to civilian life. This sudden change from a democratic to an authoritarian life pattern has most certainly a great influence on the soldiers' mental life and health. It will, therefore, be of the greatest importance for a satisfactory adjustment that it is made as humanely as possible. The necessity of strict military regulations (where they really are necessary) must be clarified; that is explained to all military personnel.

This implies that all procedures, instructions, regulations, traditions, et cetera, should be given an unprejudiced review. Only those rules and regulations which are necessary for the smooth functioning of the military apparatus should be retained. All others should—in the widest possible extent—be adjusted to fit the democratic spirit and the democratic mode of living which otherwise forms the basis of our social life. This requires that the officers' interest in the questions which are related to the above-mentioned problems is stimulated.

RECOMMENDATIONS

I am well aware that this problem cannot be considered as a direct task psychiatrists should take upon themselves. But they should, on the grounds of their understanding of human reactions, endeavor to awaken the command authorities' interest in this fundamental recognition.

Our material shows that the effect of the military service on the human mind in peacetime also can be of such a serious nature that it must be regarded as a direct reason for the development of some emotional disturbances.

Psychically well equipped and healthy persons seem to be able to manage the mental strains of the military service without

becoming ill Nevertheless drawn out, inadequate treatment on the part of the superiors or a markedly absurd duty assignment can result in abnormal emotional reactions in presumably mentally sound persons To a far greater extent we encounter the outbreak of mental illness in such individuals who have already had prior to their military service a character trait which disposes to neuropsychiatric disturbances or who in their upbringing have had exceedingly unsatisfactory family relations

The responsible authorities must so arrange the service life of recruits that they will be as little exposed as possible to serious strains which might cause mental illness to break out

Every medical officer is taught and must adhere to universally accepted principles of general hygiene Physicians are only advisers and to some degree they also supervise all preventive efforts with regard to illness (for example food shelter clothing training et cetera)

The preventive work in the mental hygiene field cannot be concentrated purely on the medical sector of military life On the contrary it is first and foremost the combatant officers who have the daily contact with the soldiers It is therefore these who first of all should partake actively in the preventive field of mental hygiene To get it started and understood a thorough and intensive training of all officers is needed The main stress is to be laid on knowledge concerning the human mind its variable vulnerabilities and its normal and abnormal reactions The importance of the different factors which can cause the development of illness must be examined in detail with particular emphasis on the importance of sound occupation and placing in the right job which for most persons, is one of the primary conditions for thriving

Medical officers on their part should also be aware of the enormous responsibility which rests on their shoulders and also of the importance an adequate treatment has both for the individual and for the service as a whole

Often the recently graduated physicians who must perform the greater part of the daily medical work in the military service cannot however be expected to have the necessary insight and experience in order to be able to undertake the double duty which today falls upon them : *e* to influence the combatant officers toward a more mentally hygienic minded attitude and treatment of their subordinates and to render the soldiers the necessary supporting psychotherapy in order to prevent and humanely treat adjustment difficulties

Civilian psychiatrists lack the necessary insight into military problems and the daily contact with the combatant officers It

should, therefore, be required that the Medical Corps engage psychiatrists for the medical service who are especially interested in working with the psychologic problems of military life and the adjustment problems of youths of military age. These medical specialists must also take on the education of the combatant officers in this indicated field of knowledge and at the same time conduct the necessary control of the young medical officers concerning prevention and treatment of psychiatric problems.

The question which arises in the end is how far we here in Norway, in a purely practical degree, have come with this new broken ground. We can say that so far we have done the first rough spade digging. We have been fortunate in obtaining the authorities' conviction as to the necessity of military psychiatrists, and we have established—not yet filled—psychiatric posts within each military command area. We have now also received a grant for a military psychiatric outpatient department at the Oslo Military Hospital. It is too early to say how these institutions will function in practice. But I believe that the positive view and understanding of military psychiatric problems which have been shown by our O. C. Medical Corps, our chief medical officers, and our university professors will help us to solve them all in a satisfactory manner.

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A TUMOR SERVICE IN A MILITARY HOSPITAL

CLIFFORD F STOREY *Capt (MC) USN*
HERBERT VOLK *Lt Comm d (MC) USNR*

TUMOR boards perform a useful purpose in the management of patients with malignant disease. The conference system of arriving at decisions in matters of therapy is of proved merit with many advantages which far outweigh its possible disadvantages. Yet in spite of these obvious assets a tumor board is not necessarily an immediate and inevitable success in a military hospital. Physicians in the armed services no less than their civilian confreres are rugged individualists. They are inherently and justly opposed to the practice of medicine by committee. When confronted with a tumor board order with teeth in it some look upon it as an invasion of their professional rights and as a disturbance of the normal physician-patient relationship. As a well organized and properly run tumor board actually operates however those theoretically irritating factors are more apparent than real. It becomes obvious that consultation with a variety of specialists even enforced consultation if you will is a real asset in patient management. The teaching value of a lively tumor conference is immediately apparent to all who attend. The younger men frequently offer stimulating and helpful suggestions and they in turn profit by the discussion of the more experienced members of the conference.

A superior type of tumor service does not burst into full bloom overnight nor does it, like Topsy just grow. On the contrary an efficient tumor service requires a concentrated effort on the part of the hospital staff and considerably in the way of physical facilities and personnel.

PREREQUISITES

There are several factors that are prerequisites for a vital tumor service. A service of this type obviously cannot be successful without the enthusiastic backing of the Command. The hospital order setting up the tumor service must be firm, clear and without loopholes or equivocation. One hundred percent participation by the staff must be mandatory. Adequate space must be provided. There should be a suitable office for the executive

secretary and another for the clerical secretary. Adequate filing cabinets are required with an acceptable room for the storage of records in the tumor clinic. A cheerful and tastefully furnished waiting room for patients is highly desirable. At least two examining rooms are required. One should be equipped with a table suitable for abdominal, pelvic, and proctoscopic examinations, and all instruments and items of equipment necessary for examinations of this type, including, of course, various instruments for biopsies, should be available in the clinic. The second room should be equipped with a suitable chair and the necessary lights and instruments for ear, eye, nose, and throat examinations. The tumor board conference room should be sufficiently large to accommodate all staff medical officers. It should be equipped with adequate sound and projection equipment and multiple-tiered x-ray view boxes.

The personnel requirements are of the utmost importance. The executive secretary occupies a key position in the tumor service and the individual selected for this assignment should be chosen with the greatest care. This position requires a medical officer of tact, energy, enthusiasm, and a sincere interest in patients with malignant disease. He should be circumspect, diplomatic, and able to handle people well. It is a great asset if the executive secretary is trained in oncology and almost a necessity for him to be surgically trained. The clerical secretary should be of a high degree of intelligence, personable, discreet, a proficient typist, well versed in medical terminology, and able to take shorthand rapidly and accurately. A full-time graduate nurse is desirable in a busy tumor clinic but a Hospital Corps Wave makes an acceptable substitute where personnel shortages prevent the assignment of a nurse.

PATIENTS NOT SEGREGATED

It is to be emphasized that there is no "tumor ward" or wards in this hospital and the segregation of patients with malignant disease is distinctly *not* advocated. Each patient with a malignancy is retained on his or her parent service and treatment is actively directed by the medical officers on that service, guided, of course, by the recommendations of the tumor board. This avoids the adverse psychological effects of congregating all patients with cancer together and permits each service to retain direct control of the care and treatment of its own patients.

When first organized, or converted from a "paper organization" which is accorded only lip service or token participation to a real and vital part of the hospital, a tumor service is apt to meet a degree of at least passive resistance from a few members of the staff. However, if the service is run on a high professional plane, its worth soon becomes apparent and those who initially resisted

the tumor service in principle become enthusiastic participants. This outcome is inevitable when it is clearly shown that a tumor board serves alike the best interests of patients with malignant disease and their responsible physicians.

Although a tumor service has long been in operation in this hospital about one year ago a complete reorganization was effected in an effort to revitalize the service and to increase its scope and usefulness. A second objective was to meet the minimum requirements for the conduction of tumor clinics and cancer detection centers which have been established by the Committee on Cancer of the American College of Surgeons.

Numerous difficulties were encountered during this period of change and much was learned by trial and error. It is believed, however, that now an organization has been established that functions efficiently and satisfies all of the requirements of the American College of Surgeons.

We believe that a description of the organization and operation of this service may be of use and interest to others who are either organizing an oncology service for the first time or contemplating the revision of an existing service in order to increase its efficiency.

The Board of Regents of the American College of Surgeons has established three official listings pertaining to oncology services:

I Cancer Hospitals

II General Hospitals maintaining a Cancer Registry as the only form of a cancer program

III General Hospitals maintaining a Cancer Registry plus Cancer Clinical Activities, i. e.

A Cancer Consultation Service or

B Cancer Consultation and Treatment Service

This hospital which has been designated as an oncology center by the Chief of the Bureau of Medicine and Surgery of the United States Navy is in class III B.

CANCER SERVICE

The services at this hospital for the diagnosis and treatment of cancer and allied diseases are the tumor board, the reviewing committee, cancer detection clinics, and the tumor clinic.

The Tumor Board. The tumor board is composed of the chief of surgery (as chairman) and the chiefs of the medical laboratory, radiologic and dependent services, the executive secretary of the tumor board, the chief of the specialized service of the

particular patient under consideration (when the patient is presented by a service whose chief is not a regular member of the tumor board), and a full time civilian recording secretary.

The board has over all cognizance of the treatment and disposition of all patients with neoplastic diseases in the hospital. Definitive therapy is not instituted prior to the consideration of the patient by the board or its reviewing committee. Medical officers have been directed to adhere strictly to the recommendations of the board. Should the presenting service disagree with the decision of the tumor board, the patient may be re-presented for further discussion.

Formal meetings of the tumor board are held at weekly intervals at a regular time and place. Emergency meetings of the entire board or its reviewing committee are held whenever a patient requires immediate consideration.

The Medical Officer in charge of each case is responsible for (1) informing the executive secretary of the board within 24 hours of the admission or detection of a patient with known or suspected malignant disease, (2) presenting the patient before the tumor board at its weekly conference or before its reviewing committee and for furnishing a summary of the case on a standard form to the executive secretary, (3) presenting to the board in follow up those patients in whom a diagnosis has been established, definitive treatment completed, or where circumstances have arisen which make it advisable to consider a change in the therapeutic program and (4) ensuring that each patient with a neoplastic disease, prior to discharge from this hospital or upon the completion of treatment is sent to the tumor clinic office. At this time, the patient's files are checked and he is given specific instructions in the follow up procedures.

Reviewing Committee The reviewing committee functions as the executive committee of the tumor board. The membership may vary from case to case but is always composed of at least three members of the tumor board and consists of the chief of the service from which the patient is presented, the executive secretary of the tumor clinic and the chief of that particular service, who, because of his specialty training may be expected to be of the greatest assistance in arriving at a proper decision concerning the patient under consideration. Additional members of the tumor board may serve on any given reviewing committee and frequently, because of the complicated problem to be considered, they are called upon to do so.

A reviewing committee may be convened by the executive secretary when any service has a patient to present whose problem is sufficiently urgent that it would be unwise to wait for formal pres-

entation before the tumor board. The reviewing committee also meets regularly once weekly in addition to the emergency meetings mentioned in the preceding paragraph at which time those patients are dealt with who were not selected because of the routine nature of their problem for presentation before the weekly tumor board conference.

Cancer Detection Clinics Chiefs of services are responsible for the operation of cancer detection clinics in their respective departments and are required to maintain and operate their facilities in accordance with the standards outlined by the American College of Surgeons for cancer detection centers. Patients found to have positive or suspicious findings are then referred to the tumor board.

Tumor Clinic The executive secretary of the tumor clinic is a medical officer preferably trained in oncology who is appointed to his position by the commanding officer. He is a permanent member of the reviewing committee, the recorder of the tumor board, and the executive assistant to the chairman of the tumor board and as such is responsible for the preparation of the agenda for the weekly tumor board meeting. He supervises the maintenance of a record system adhering to the requirements established by the Committee on Cancer of the American College of Surgeons, implements the follow up service by which contact is maintained with patients with neoplastic diseases in accordance with the recommendations of the tumor board, and is available on request as a consultant to any of the services in arranging for or in carrying out special diagnostic or therapeutic procedures. In addition, he coordinates consultations which may be requested in accordance with the decisions of the tumor board. When a patient with a neoplastic disease is transferred from this hospital to another medical facility for treatment, it is his duty to see that adequate records, including roentgenograms if appropriate and microscopic slides of the lesion, are forwarded promptly to the activity to which the patient is transferred. He supervises the full time civilian secretary who is charged with the responsibility of recording verbatim the entire discussion of each case presented at the formal board meetings and who does the routine clerical work in the clinic proper.

DISCUSSION

The weekly formal tumor board conference is primarily designed for teaching. A mimeographed program stating the patient's name, ward, diagnosis, and the name of the presenting physician, as well as the reason why the case is being presented (i.e., for diagnosis, for treatment, for diagnosis and treatment, for follow up, and for interest) is distributed to each medical officer two days prior to the meeting. This allows time for interested physi-

cians to examine the patient or review the literature on the subject prior to the presentation of the patient at the conference.

At the weekly session, the case history is presented by the patient's ward medical officer. Significant roentgen findings are reviewed by the radiologist. If a specimen for biopsy has been taken, the microscopic slides are projected on a screen and discussed by the pathologist. The patient is shown in person if the physical findings are of particular interest. The recommendations of the presenting service are then given by the medical officer who presents the case and the case is then open for free discussion. Comments, suggestions and discussion from the floor are encouraged, after which the tumor board members discuss the case. Members of the tumor board may make alternative proposals as to the management of the patient in question and following full consideration of all proposals, a decision is reached by a majority vote.

Interest has been high and the attendance at these conferences has been good. Lively differences of opinion have been expressed by members of the staff who were trained not only in different geographic but also in widely differing philosophical medical environments. However, in most instances the members of the tumor board have concurred with the recommendations of the presenting service.

For each patient who comes to the attention of the tumor board or the reviewing committee, an alphabetical index card, a follow-up control card, and a tumor board jacket are prepared. The tumor board jacket contains (1) the presenting medical officer's initial case summary, (2) a verbatim transcript of the tumor board discussion or a summary of the action taken by a reviewing committee, (3) the operation record if an operation was performed, (4) a complete record of any irradiation therapy that may have been given, (5) pathologic reports, (6) photographs and photomicrographs if any have been taken, (7) a copy of the hospital discharge summary, and (8) a copy of the necropsy protocol if the patient came to autopsy.

For each patient with a malignant disease, an American College of Surgeons Cancer Summary Form is completed. The jackets of those patients who are found not to have a neoplastic disease are transferred to an inactive file.

An assortment of printed form letters has been prepared for obtaining follow-up data. A letter specifying the date and time when a patient is to report for follow-up examination is given to him when he leaves the hospital. Those patients who had been in this hospital prior to the inauguration of the present system are contacted by telephone or letter. Other form letters are sent to the patient's private physician or to the Veterans Administra-

tion—in any event to the physician who is medically responsible for patients who are no longer in the service. The families of former patients who cannot be located are contacted for follow up information. Replies to over 85 percent of our inquiries have been received, and a majority of these responses have contained pertinent information concerning the patient.

SUMMARY

The organization and operation of the cancer services in this hospital have been briefly reviewed. The organization and method of operation of the tumor service in this hospital does not represent original ideas on the part of the authors. It follows quite closely the recommendations of the American College of Surgeons as set forth in its various publications concerning the organization of tumor services and cancer detection centers. Furthermore a similar organization is in effect in other naval hospitals.

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OSLER THE PROLIFIC AUTHOR

Almost everything that Osler did seemed eventually to develop into an article for a medical journal, a chapter in a textbook, a lecture which was reported, or notes and comments in his daybooks. He would dash off from a visit to his relatives in Canada to see or make a post mortem and find a rare disease that would subsequently be written up. He made full notes of such cases at Blockley as especially interested him, and then spent hours over the microscope with specimens obtained. Though it is evident that he worked with intense concentration, it is amazing that he was able to take such an active part in so many organizations and still find time for long holidays and even on these he got grist for his literary mill. As he said later, "Both pen and brain got a deal of practice in Philadelphia." And not only did he himself turn out work, but by his example and his contagious enthusiasm Osler stimulated those who came in contact with him to observe, record and publish.

—WILLIAM WHITE, Ph D

Int nat nal R d J M d ne nd
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Clinicopathologic Conference

U S Naval Hospital St Albans, N Y *

DIARRHEA

Summary of Clinical History A 33 year old woman entered the hospital because of nausea, vomiting, and diarrhea. Since the age of 23 she had had remissions and exacerbations of psoriasis associated with arthritis. The skin and arthritic lesions almost completely disappeared in 1951 following the intramuscular administration of 0.5 gram of cortisone daily for 21 days. In February 1953, however, her symptoms recurred. Cortisone was again instituted and she was maintained on 100 to 150 mg daily orally until 24 January 1954 with little improvement and mild fluctuations in her complaints. She then began to note nausea, emesis, and diarrhea. The diarrhea, accompanied by cramps, occurred soon after eating and the stools contained material similar to the ingested food. She had no fever. Because of the persistence of these complaints for five days she was admitted to the hospital on 29 January.

Physical Examination Physical examination on admission revealed a blood pressure of 120/100 mm Hg, temperature, 98.8 F, pulse, 88 and respiration, 22. She weighed 111 pounds. There were extensive psoriasiform lesions over the entire body. Her extremities were markedly deformed and there was limited motion of most of her joints. Her abdomen was flat, nontender, and without palpable masses.

Laboratory Studies On admission her red blood cell count was 3,760,000 per cu mm, hemoglobin, 10.5 grams per 100 ml, and hematocrit, 36 percent. A white blood cell count showed a total of 5,400 cells per cu mm with a differential count of 63 percent neutrophils, 32 percent lymphocytes, 3 percent monocytes, and 2 percent eosinophils. A urinalysis revealed normal findings. The following day the blood urea nitrogen was 43 mg per 100 ml, chloride, 625 mg per 100 ml, and CO₂ combining power, 44.7 volumes percent.

*Capt Harold G. Young (MC) USN Commanding Officer. From the Medical Service.
Capt Lawrence E. Bach (MC) USN Chief.

A barium enema and a gastrointestinal roentgenographic series revealed a gastocolic fistula (fig 1). An electrocardiogram showed a semivertical electrical axis without other abnormalities.



Fig 1 Roentgenogram of the gastrointestinal tract showing the gastocolic fistula.

The dosage of cortisone (25 mg four times a day) was gradually reduced for four days and then discontinued on 4 February.

On 8 February her blood pressure dropped to 69/48 mm Hg and she complained of being very thirsty. The blood urea nitrogen now was 31.7 mg per 100 ml, but the chlorides rose to 790 mg per 100 ml. The CO_2 combining power remained about the same at 42.8 volumes percent.

On 9 February an electrocardiogram showed a vertical electrical position and depression of the ST segments in leads I, II, and III. The amplitude to T, T_1 , and T was decreased and T_{AVF} was depressed. T waves from V_1 through V_6 were less upright than in the previous reading. The ST segments in V_1 and V_2 were slightly depressed and the QT interval (0.26 sec) was increased over the previous reading. She continued to be hypotensive. On 11 February the blood urea nitrogen became elevated to 53.5 mg per 100 ml, the chlorides dropped to 755 mg per 100 ml, and the CO_2 combining power to 40.0 volumes per

cent The total plasma protein was 5.64 (albumin, 2.86, globulin, 2.78) grams per 100 ml

Course in Hospital On 13 February, following administration of 500 ml of blood, the patient complained of epigastric, substernal, and head pain. She moaned continuously and appeared apathetic, answering questions only by saying "yes" or "no." Her blood pressure increased to 120/70 mm Hg. She continued to have diarrheal stools that contained undigested food. The following day her speech was slurred, she had difficulty in swallowing, and became incontinent of urine and feces.

In preparation for surgical exploration, doses of cortisone (50 mg twice a day, 50 mg four times a day, and 75 mg daily) were given on 13, 14, and 15 February respectively. On 15 February a laparotomy was done and the gastrocolic fistula was repaired under general anesthesia. The patient's blood pressure had to be maintained by continuous intravenous infusion of levophed (brand of levarterenol bitartrate) during the operation. For two days following the operation she was semistuporous, irritable, and hypotensive. Continuous drip of levophed was given to maintain her blood pressure. Each day postoperatively, 50 mg of cortisone were given intramuscularly four times a day. Twenty units of corticotropin (ACTH) were given intramuscularly on her second and third postoperative days. After a short clinical improvement on her third postoperative day, she died suddenly.

DISCUSSION

Doctor Levy When this patient was first hospitalized she had a definite gastrocolic fistula presumably due to perforation of a gastric ulcer into the colon. It is rather unusual to have a perforation into the colon as a complication of peptic ulcer whether cortisone has been used or not. In most instances this complication occurs in patients who have had a long standing ulcer or a gastroenterostomy as a result of which the colon has become adherent to the intestine. Occasionally neoplasms of the stomach are accompanied by a slow perforation. This case is unusual in that the perforation occurred without any antecedent knowledge of a peptic ulcer and without any previous operation.

In the differential diagnosis we should consider the possibility of an ulcer of the colon perforating into the stomach. There were no preceding intestinal symptoms to suggest ulcerative colitis. Arthritis in conjunction with intestinal disease occurs in Whipple's disease but the patient's age and sex and the absence of steatorrhea are against this diagnosis.

Lt. Carroll M. Levy (MC) USNR, Medical Service

Discontinuation of cortisone led to shock which was accompanied by thirst an elevated serum chloride and azotemia These changes occurred although the dose of cortisone was tapered off gradually and they reflect the degree of adrenal depression which had developed over the preceding months when she had been receiving cortisone Probably this was accompanied by atrophy of the adrenal gland principally due to a loss of lipid in the zona glomerulosa and zona fasciculata Atrophy of the adrenal cortex induced by adrenal steroids is the result of decreased endogenous excretion of corticotropin (ACTH) The hypotension and hemoconcentration are typical of adrenal insufficiency secondary to withdrawal of cortisone However one must consider the possibility that she had hemorrhage or a further perforation to account for these clinical features

Thirst which was present may be attributed to decreased secretion of saliva due to dehydration or to an alteration of her serum sodium concentration and/or plasma volume Probably both hypovolemia and hypernatremia contributed to this symptom The low CO combining power and the elevated serum chloride are of interest Hyperchloremic acidosis which is usually seen with ammonium chloride therapy or ureteral implants into the colon could explain these findings Whether the gastrocolic fistula produced a similar metabolic defect is not too clear It seems more likely that the hyperchloremia was due to water dehydration and the accompanying acidemia was related to accumulation of organic acid as a result of renal functional impairment With prolonged cortisone therapy renal dysfunction may occasionally result from morphologic changes in the kidney similar to the intercapillary glomerulosclerosis described in diabetes by Kimmelstiel and Wilson however abnormal kidney function in this patient was probably due to adrenal insufficiency and shock

The electrocardiographic picture appears to be typical of that seen in adrenal insufficiency Adrenal insufficiency may be accompanied by depression of S-T segments and T wave changes without demonstrable changes in the serum potassium or calcium However because of the gastrocolic fistula with probable deficiency of these cations due to poor food absorption one cannot be sure that their deficiency did not contribute to the resulting electrocardiographic alterations If the Q-T interval had been prolonged it would have suggested hypocalcemia because potassium deficiency has no effect on this interval Potassium deficiency increases the prominence of the U wave in addition to depressing the T waves and S T segments

After the patient's blood pressure returned to normal she had apathy and sensorial changes which probably were due to hormonal effects and which reflected the gravity of her illness Refractoriness of hypotension to levophed and other vasopressor agents is typical of adrenal insufficiency

At the time of operation she was critically ill. Patients with gastrocolic fistula are always poor surgical risks. The superimposition of adrenal insufficiency in such patients makes surgical intervention more hazardous. Patients receiving adrenal steroids at any time during a preceding period of from six to 12 months may require special therapy. These patients should be on a regimen similar to that prescribed for those having adrenalectomy for Cushing's disease, metastatic carcinoma or hypertension.

A satisfactory program would consist of 200 mg of cortisone 48 hours, 24 hours and two hours preoperatively and the intravenous administration of 10 mg of hydrocortisone per hour during the operation and for four to six hours postoperatively. This should be followed by 50 mg of cortisone every six hours on the first postoperative day, every eight hours on the second and third postoperative day and then in gradually decreasing doses. When withdrawing ACTH or cortisone and its analogues it is essential to gradually reduce dosage. It may be helpful to give ACTH during the withdrawal period of cortisone. The possible development of acute adrenal insufficiency makes it desirable to give whole adrenal extract.

In summary I believe that this patient's terminal illness was due to complications of adrenal steroid therapy. Biochemical alterations incident to adrenal insufficiency were probably responsible for the electrocardiographic sensorial and blood pressure changes. The morphologic abnormalities which were encountered such as the gastrocolic fistula and probable adrenal atrophy were secondary to physiologic alterations which may occur when exogenous adrenal steroids are administered.

Doctor Bick: Are the symptoms she had following the blood transfusion of any significance?

Doctor Leevy: I thought about the explanation for these symptoms and believed they could be a part of her cerebral changes related to adrenal insufficiency. They might represent the effects of suddenly increasing the plasma and/or blood volume with transfusions or finally be due to transfusion reaction. It was quite difficult to determine from the protocol which if any of these mechanisms was responsible.

Doctor Fly: Would it have been wiser to use hydrocortisone intravenously or whole extracts of the adrenal?

Doctor Leevy: Yes. I think so. If one administers cortisone it is presumably changed to hydrocortisone. In an acute situation it is better to give hydrocortisone. In patients with associated electrolyte depletion corticosterone would be preferable. Patients who have received

LE (18) C ORG L B K Jr (AC) LSJR Int
L J H F Fly (AC) LSJR Medical Sec c

cortisone over prolonged periods may have hepatic injury due to its catabolic effects expressed anatomically by fat accumulation in the liver and biochemically by a decreased excretion of urinary 17 ketosteroids. Liver damage may contribute to decreased response to cortisone. Where there is uncertainty it is advisable to give hydrocortisone intravenously. In a patient with a gastrocolic fistula in whom materials given orally may not be absorbed it would be desirable to give all medications by muscle or vein.

Dr Leevy's diagnosis

Adrenal atrophy and insufficiency secondary to steroid therapy

PATHOLOGIC FINDINGS

Dr B. H. We have with us today our visiting consultant in pathology, Doctor John M. Pearce, who will tell us actually what was the trouble. We have been speculating up to now.

Dr P. C. Will they all be very good speculations. At autopsy the patient was found to be an extremely emaciated person with considerable deformity and an apparently horrible skin condition, a dermatitis or rash. When the body was opened 1,000 ml of clear amber fluid was found in each pleural cavity and 2,000 ml in the peritoneal cavity. Such fluid collections may be explained on the basis of poorly functioning kidneys due to hypotension during a time in which she was getting a great deal of fluids intravenously just as a means of getting the levophed into her. She had no pulmonary or subcutaneous edema.

The heart weighed only 250 grams and although the patient was a small woman this weight is on the lower border of normal. Microscopic examination revealed a rather striking atrophy of the muscle fibers of the myocardium itself. Such atrophy probably was not a factor in her inability to maintain her blood pressure. In both lower lobes of the lungs there were fairly extensive infarctions and there were thrombi in the distal inferior branches of the main lower branches of each pulmonary artery. The prosector was not able to find any thrombus in a vein which might be a source for emboli. Therefore the conclusion was reached that they were not emboli but were local thrombi that occurred because of the poor state of the circulation and the patient's extreme illness, a static thrombosis in the dependent arteries.

The liver was large and weighed 2,550 grams. It was a very greasy and yellow liver. In other words there was a marked infiltration of fat throughout the liver (fig. 2). Two possible explanations for the fatty liver are (1) cortisone causes a deposit on of fat within the cytoplasm of the liver cells and (2) the presence of a gastrocolic fistula.

results in absence of food absorption. Because of the extensive fatty metamorphosis there was not enough intact liver parenchyma for necessary liver functions although the organ as a gross organ was larger than normal. The gallbladder curiously contained a few milliliters of very watery mucous material. Apparently no bile was entering the gallbladder but on the other hand there was no obstruction of the cystic duct. This white bile which one finds in hydrops of the gallbladder is of course as you all know usually the result of an obstruction of the cystic duct. Here there was no obstruction. Presumably the



Figure 2 Photomicrograph showing extreme fatty metamorphosis of the liver ($\times 75$)

liver was the parent of the watery bile but the patient was not jaundiced so it's a little hard to explain it by the argument that the liver was not putting out good bile. The pancreas was not unusual. The gastrointestinal tract showed the evidence of the repaired gastrocolic fistula. The fistula was on the greater curvature of the stomach which is an unusual place for a peptic ulcer to occur. It was especially unusual because as this stomach was further examined another chronic peptic ulcer situated in the more usual spot on the lesser curvature a few centimeters above the pylorus was found. It measured $1\frac{1}{2}$ cm in diameter was quite deep and had a nice clean-cut edge. The patient apparently had no symptoms of the ulcer just as she had no symptoms of the fistula other than the mechanical transfer of stomach contents into the colon.

Now we come to the really important factor the adrenal glands. The adrenal glands were markedly atrophic the cortex measured well less than a millimeter (fig 3). Curiously they did have quite a bit of lipid material. Atrophy of the adrenal glands due to cortisone therapy usually is associated with a diminished lipid content. It is the lipid which contains the various steroids. In this case the cortical cells contained quite a bit of fat however the cortex as a whole was markedly narrowed.

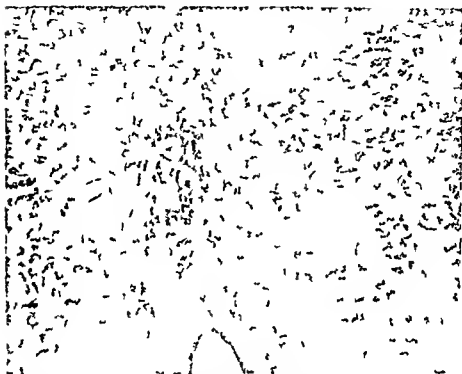


Figure 3 Photomicrograph showing adrenal cortical atrophy with medullary involution. (X 75)

The pituitary was grossly normal but had histologic changes which are of great importance. In adrenal atrophy secondary to cortisone therapy it is thought that the pituitary is suppressed so that it puts out no corticotropin. Without the stimulus of the corticotropin atrophy of the adrenal occurs. The histologic changes in the pituitary consist of a loss of granularity of the cytoplasm of the basophilic cells. These cells tend to become hyalinized. In spite of the patient's psychotic symptoms the brain showed no gross abnormality; it was not edematous and there was no lesion. The kidneys were normal in size. There was no renal lesion.

D to G: What happens to the adrenal medulla in these patients?

Doctor Pearce As far as I know it doesn't change very much

Doctor Leevy Would you call those Crooke's hyaline changes in pituitary?

Doctor Pearce Yes

Anatomic diagnoses

Adrenal atrophy secondary to prolonged cortisone therapy

Fatty liver

Gastrocolic fistula, repaired

Peptic ulcer of stomach

Hyalinization of basophils of pituitary

Psoriasis

Static thromboses of inferior radicals of left and right pulmonary arteries

Doctor Boch This case was selected for presentation not so much because of its value as a diagnostic problem but for two very important additional reasons (1) Because of its potentiality for provoking a general discussion of hormone therapy and (2) because it would we hoped serve as a very forceful reminder to all that many of our present-day therapeutic measures—chemotherapy antibiotics sulfa drugs hormones et cetera—have the unhappy faculty of producing undesirable and sometimes disastrous results. These effects are not always predictable except as a possibility. However, and I am sure all of you will agree, we must always be conscious of these effects and aware of the fact that we are many times taking a so-called "calculated risk" in their use and equally as important that these medications should be prescribed only in the presence of definite clinical indications

CANCER OF THE PROSTATE

Any carcinoma (of the prostate) can be cured if found early enough and extirpated—the problem is to find it. Thus it is urged that more routine rectal examinations be done in men over 40 and more perineal punch biopsies be done in men under 70 having suspicious prostatic nodules exhibiting no evidence of metastasis or extension. Consequently it is also urged that more patients be considered as candidates for radical prostatectomy.

—DAVID W. CHASE, M.D.

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CASE REPORTS

An Illuminating Case of Foreign Body in the Peritoneal Cavity

RUSSELL O SETTLE *M d c l D ct*

JOHN J MENDILLO *S Ass t t Surg n*

VICTOR W GROISSER *S A sta t Surge*

U S P bl c H alth S rv

A WIDE VARIETY of foreign bodies have been found in the peritoneal cavity^{1*} including such diverse items as hemostats, hairpins physician's eyeglasses metal sounds sponges, sewing needles and chicken bones to name but a few. Previous surgical procedures during which material is left behind perforation through the bowel of swallowed articles traumatic penetration of the abdominal wall and perforation of the uterus in attempted abortions are the most frequently reported causes. Though numerous objects have been found in the rectum or sigmoid colon following introduction through the anal orifice further progress into the abdominal cavity is uncommon. Most foreign bodies of the lower bowel are self reported and are removed via the anal orifice.

CASE REPORT

A 51 year-old white male federal prisoner was brought to the emergency room of the hospital at 11 00 p m on 22 November 1953 complaining of severe lower abdominal and rectal pain and a mass protruding from the anus. He stated that he had been attacked five hours earlier by three assailants who forcibly inserted an object of some type into his rectum resulting in severe pain and syncope. When he revived he began having violent abdominal cramps which continued to increase in intensity. He attempted to relieve himself by moving his bowels but something came out which he could not get rid of. The distress finally became so intense that he called for help. He was first seen at the hospital by a civilian medical technician who notified the medical officer on duty reporting a severely ill patient holding his abdomen in great distress who appears on examination to have a piece of flesh hanging from his rectum half way to his knees. The patient was immediately examined by a surgeon who noted that the "piece of flesh" was a mass of viable greater omentum protruding nine inches beyond the anus. The pain was apparently excruciating. The patient's blood pressure was 120/80 mm. Hg pulse 90 per min.

F m U d Sta P u y Le worth has

respiration 20 per min and temperature 100° F The lower abdomen was boardlike with exquisite rebound tenderness Peristalsis was absent He was wearing an artificial leg having had a right lower leg amputation in the past Except for the protruding omentum there were no external signs of injury and no other positive physical findings



Figure 1 (A) Anteroposterior and (B) left lateral views of the abdomen showing a light bulb surrounded by gas in the upper peritoneal cavity The less dense extension with the two buttons seen at the base of the bulb was found at operation to consist of cardboard cloth and friction tape forming a handle for the bulb

The patient was immediately prepared for operation At exploratory laparotomy two hours later the greater omentum was found prolapsed into the colon through a 6-cm laceration in the anteromedial wall of the rectosigmoid and the transverse colon drawn down tightly into the pelvis The omentum was operatively divided where it entered the colon and the distal portion removed from below The tear in the rectosigmoid was repaired uneventfully but the remainder of the abdomen was explored manually with considerable difficulty due to fading of the spinal anesthetic In spite of supplemental intravenous morphine pentothal (brand of thiopental sodium) and curate the abdomen was closed with difficulty

On the second and third postoperative days the patient's condition was considered excellent On the fifth postoperative day he complained of increasing abdominal pain and examination revealed signs of early intestinal obstruction The temperature and leukocyte count rose there was tenderness and a hard mass in the left upper quadrant The first flat plate of the abdomen was taken at this time and revealed to the amazement of all a large light bulb lying in the upper abdomen (fig 1 A and B) The patient was again taken to the operating room the previous left rectus incision reopened and the foreign body removed from

an abscess cavity located high under the transverse colon and the remaining portion of the omentum adjacent to the inferior aspect of the mesocolon. On close scrutiny it was found to be an intact 60-watt electric light bulb with the base encased in cardboard forming a rounded handle into which torn pieces of underwear cloth were tightly packed to give the handle substance. Two buttons were attached to one fragment of cloth. This was all held together with black friction tape. No further lacerations of the gastrointestinal tract were found and it seemed obvious that the bulb had entered the peritoneal cavity through the rectosigmoid tear but had been overlooked at the first laparotomy.

Thereafter the patient's condition deteriorated. Three weeks post-operatively, he again developed incomplete intestinal obstruction due to the formation of another abscess. This was drained at operation but 28 hours later a fecal fistula developed opening into the mid jejunum. In spite of all efforts the fistula remained patent and the patient developed increasing malnutrition and inanition which finally resulted in his death on 15 April 1954 about five months after the initial admission.

DISCUSSION

Several accounts of light bulbs entering the rectum and sigmoid colon through the anal orifice have previously appeared in the literature although to our knowledge this is the first report of a light bulb lying free in the abdominal cavity. Smooth objects of this type drinking glasses bottles et cetera, are not uncommonly self introduced for variously stated reasons, such as the relief of constipation or the replacement of prolapsing hemorrhoids and similar cases are not unusual in the surgical practice of large general hospitals. Some patients will admit that the foreign body was employed for erotic gratification though most give less self incriminating explanations.

In view of this the probable mode of entry of the bulb into the peritoneal cavity of this patient is of some interest. Thorough investigation of the alleged assault indicated that the patient a recidivistic criminal, had not been attacked but rather had in all likelihood, been using the rounded handle of the light bulb for anal masturbation. The five hour wait before seeking medical aid the absence of witnesses who could corroborate his story of the attack the known frequency with which adult male prisoners practice anal erotic stimulation the fact that an unbroken light bulb could hardly have been forcibly introduced past the anal sphincter without the patient's cooperation and the manner in which the base of the bulb had been fashioned into a handle led to the conclusion that the history given was a pure fabrication. It was assumed therefore that the bulb had been self introduced accidentally and that the patient under

standably did not wish to reveal the true sequence of events. A short broom handle with a bent nail protruding from one end, discovered in the patient's cell following the incident, was evidently used by him in an attempt to retrieve it. His manipulations undoubtedly produced the laceration of the rectosigmoid through which the bulb slipped into the abdominal cavity and the omentum subsequently prolapsed.

Certainly this case is an excellent illustration of the importance of taking a roentgenogram of the abdomen of every patient presenting an acute abdominal emergency despite the apparently obvious diagnosis and the necessity of immediate laparotomy. Had a routine flat plate been ordered on the night of admission the true nature of the situation would have been immediately apparent, the surgeon would have been spared the embarrassment of overlooking such a large foreign body, and the patient's life might have been saved.

SUMMARY

A case of a foreign body in the abdomen is herewith presented, with the portal of entry for a 60 watt light bulb, found intact in the peritoneal cavity and originally missed at operation, being the anal orifice. It would appear that the bulb, the base of which had been fashioned into a handle by covering it with cloth, cardboard, and friction tape, was self introduced into the rectum accidentally during an act of anal stimulation. It then gained entrance into the peritoneal cavity through a tear in the rectosigmoid which the patient made in an attempt to retrieve it. The importance of taking a preoperative flat plate in abdominal emergencies is again stressed.

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approximated 90/70 112/96 and 96/82 mm Hg the pulse rate rose gradually to 100 and the respiration to 24



Fig re 2 Roentgen gram tak 1 May 1954 bowi g gl b la be s shadow associated with pericardial effusion and cardiac tamponade

The patient's head and neck were cyanotic in the morning. The neck veins were distended and the venous pressure was 60 mm of water. A paradoxical pulse, enlarged cardiac outline, and feeble heart sounds were present. Respiration was 28, blood pressure 92/80, pulse 110. The patient was placed in orthopneic position and oxygen was administered by nasal catheter. The venous fluids and nasogastric suction were stopped. A diagnosis of cardiac tamponade related to the chest wound sustained 16 days before was made.

At 1300 hours the patient was very cyanotic and distressed. Blood pressure was 84/0 mm Hg, pulse 122, respiration 28. A pericardial tap was done and 360 ml of serous fluid was removed under mild pressure. The fluid was sterile and contained only polymorphonucleocytes and lymphocytes. The patient improved immediately and the blood pressure returned to 114/80 mm Hg and the pulse to 72.

Roentgen graphic studies later revealed a loss of the globular contour and showed the heart size to be normal (fig 3). The patient was

ambulated gradually. Electrocardiographic findings were normal. On 9 May the patient was discharged to duty.



Figure 3 Roentgenogram taken 14 May 1954. The cardiac silhouette is normal.

DISCUSSION

The case illustrates the treachery of a small wound of the thorax which produced little difficulty at the time of occurrence but was followed 16 days later by acute pericardial tamponade. It is impossible to determine completely the extent of a wound without exploration of it.

In retrospect, the initial roentgenogram showed pneumopericardium which might have been a clue to the true nature of the wound.

Perforating and penetrating wounds of the heart due to stabbing have become uncommon in military personnel since the advent of body armor. Stab wounds of the chest are still relatively common in the civilian population. Farringer and Carr¹ reported that more than 50 percent of the chest wounds in civilians were due to stabbings. They mentioned two patients who died because of delay in making the diagnosis of cardiac tamponade.

It is always desirable to explain the problem at hand and its effective solution if achieved. It appears that this soldier had a wound which involved his pericardium. The serous surface of the pericardium responded to the injury by producing fluid which compressed the heart gradually ultimately producing tamponade. The hypotensive state was due to inadequate cardiac output resulting from tamponade.

SUMMARY

A small chest wound seemingly superficial caused pneumopericardium in a patient associated with cardiac tamponade occurring 16 days after injury. A single aspiration of the pericardial sac was a lifesaving measure.

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THE PARADIGM OF FRUSTRATION

To me it appears a disservice to students if we encourage them in the research for pathognomonic signs rather than have them view all aspects of a patient's problem as an entity and it is particularly deplorable if through misplaced focus of attention we let them infer that a clinical problem can be appropriately described in a series of laboratory reports. To some students fresh from their courses in the medical sciences and fired with zeal to put clinical pediatrics on an accurate quantitative basis the identification of Mongolian idocy represents the paradigm of frustration—a situation in which no one sign is diagnostic and in which all the accessory aids one can bring to bear including x-ray carry less weight than does the impression gained on simple inspection. Here is the problem of the weight of evidence in a nutshell. If then students are to be coaxed to accord more judicious consideration to information which they may glean from history and from physical examination we owe them guidance in those elusive areas of clinical probabilities and the influence of age on normal behavior and on behavior during illness the pediatrician's special preserve.

—RUSTIN M INTOSH M D

A M A Am J Child
J Child pp 34 July 1954

Lithopedion

ROBERT E. L. NESBITT Jr. *Captain MC, USAR*

IN CERTAIN lower animals lithopedion formation in utero is relatively common, the fetus being retained in the uterus for a long time with subsequent deposition of lime salts. It is generally conceded, however, that lithopedion formation in man is confined to extra uterine pregnancies in which part or all of the products of conception are extruded or initially implanted into the abdominal cavity where calcification takes place. One¹ established additional factors necessary for the formation of lithopedions: sluggish circulation, absence of infection, and a fetus advanced more than a three month gestation.

Barabridge² cited an interesting reference from Gould and Pyle pertaining to this subject. "Israel Spach" in an extensive gynecologic work published in 1557 figures a lithopedion drawn *in situ* in the case of a woman with her belly laid open. He dedicated to this calcified fetus the following curious epigram: Roughly translated from the Latin the epigram reads as follows: "Deucalion cast stones behind him and thus fashioned our tender race from the hard marble. How comes it that nowadays by a reversal of things, the tender body of a little babe has limbs nearer akin to stone?"

The chemical changes responsible for the production of a lithopedion are not well understood. Calcium is deposited in dying or dead tissue without reference to the blood calcium. Fatty degeneration occurs initially then hydrolyzation takes place and a fatty acid is liberated. The fatty acid is replaced by carbonic acid and phosphoric acid in the blood to form calcium carbonate and calcium phosphate. Wells³ found that pieces of sterilized cartilage placed in the peritoneal cavity of a rabbit soon became calcified having taken up lime from the fluid in which they bathed. He concluded that the process is a physical rather than a chemical one, the calcium and phosphate being absorbed by the degenerated tissue. MacCallum⁴ believed that some local chemical process must be responsible for the precipitation of calcium in the dead materials exposed to the circulating fluids, as well as in bone. He stated that iron is practically always demonstrable in areas of calcification, but it is possible that it is merely absorbed

From U. S. Army Hospital, Bad Nauach, Germany. Dr. Nesbitt is now at Johns Hopkins Hospital, Baltimore, Md.

by the calcium salt or precipitated by phosphoric acid liberated in that position

Schumann⁷ categorized the final results of ectopic gestation as follows resorption mole formation hematocele suppuration skeletonization and adipocere and lithopedion formation

Küchenmeister proposed a practical method of classifying lithopedion specimens

- 1 The lithokelyphes in which the membranes alone are calcified and form a hard shell surrounding the fetus The fetus is not involved in the process of calcification

- 2 The lithokolyphopedion in which both the membranes and the fetus are calcified

- 3 The true lithopedion (stone child) in which the fetus is infiltrated with calcium salts and in which calcification of the fetal membranes is negligible This type occurs when the fetus extrudes unattached into the abdominal cavity and the membranes are either left behind or tightly wrapped about the fetus

Masson and Simon⁸ preferred to use the term lithopedion for the entire group and proposed the term lithotecnion for the true lithopedion

The occurrence of lithopedion formation has been reported as from one to two percent of all extra uterine pregnancies Masson and Simon reported an incidence of 2.0 percent Schumann an incidence of 1.5 to 1.8 percent and Anderson and others an incidence of 0.81 percent in 370 cases of extra uterine pregnancy The incidence has undoubtedly been reduced by the modern practice of early diagnosis and surgical intervention

Since Venotiss first described this condition in 159, there have been numerous cases reported in the literature After adding three cases of their own Anderson and associates in 1951 reported a total of 952 cases of authentic lithopedion formation in the world's literature Since that time the following authors have reported cases McClure and Epperson Schwarz⁹ Roberts Sordo Noriega and Herrera and Casimiro¹⁰ The present case brings the grand total to 958

Lithopedions are usually seen in the cul de-sac and pelvis as an incidental finding at operation When laparotomy is necessitated by symptoms the principal ones are usually dyspareunia and pressure Masson and Simon stated that a lithopedion may not cause symptoms but 60 percent of patients develop complaints attributable to the presence of the lithopedion after a quiescent period of from two to 50 years The symptoms are usually mild at first, according to these authors but may become more severe

and be attended by marked weakness and emaciation. In neglected cases, perforation into neighboring viscera or through the abdominal wall may occur.

Recently I managed a patient with lithopedion formation and incapacitating symptoms of 11 years' duration.

CASE REPORT

A 41 year-old woman para 0 was admitted to this hospital on 28 April 1953 because of lower abdominal pain and 14 days of vaginal bleeding.

Eleven years previously she had had abdominal pain diagnosed as due to acute pelvic inflammatory disease. Since that time she had recurrent attacks of lower abdominal pain, fever, and yellow vaginal discharge. During the seven years prior to admission her activities were greatly limited because of abdominal pain, despite periodic pelvic diathermy, hot douches, and chemotherapeutic agents. In addition to lower abdominal pain, she complained of lower abdominal pressure, episodes of abdominal distention, and severe dyspareunia.

Her attack at the time of admission dated from 14 April, and from that time until admission she had daily vaginal bleeding that required from three to four pads per day. She also complained of constant aching lower abdominal pain of a week's duration.

On admission she was obviously in pain but did not appear seriously ill. Her abdomen was obese, protuberant, and markedly tender over both lower quadrants. Pelvic examination revealed an orange-sized cystic right adnexal mass and a smaller, tender, cylindrical mass in the left adnexa. A roentgenogram of the abdomen revealed an ill-defined calcified mass in the pelvis.

She was treated with penicillin and streptomycin. Her general condition improved until the twelfth hospital day when she developed epigastric pain and nausea. She had hyperactive bowel sounds and some gaseous distention. She remained afebrile but a definite tachycardia was present. Her hemoglobin had fallen from 15.6 grams to 10.5 grams per 100 ml, probably due to the vaginal bleeding that had continued. The history of pelvic infection, the persistent pain despite chemotherapy, distention, amenorrhea, normal temperature, and drop in hemoglobin in association with a pelvic mass suggested the possibility of an old ruptured tubal pregnancy with hemaroma formation.

On 13 May 1953 a laparotomy was performed under general anesthesia and a 15 cm cyst was found in the right ovary. Both tubes were enlarged, chronically infected, and adherent. There was a small cyst of the left ovary with a small parovarian cyst. A 12 cm, completely calcified fetus was densely adherent to the sigmoid and incased in dense fibrous tissue (fig. 1). The fetus was removed with great difficulty in

the course of a subtotal hysterectomy and bilateral salpingo-oophorectomy. The uterus was normal except for adhesions and one small intramural myoma.



Fig. 1. Lithopedion, mm mm, with fetal skeleton and external tibial bone.

The patient withstood the procedure well. Her postoperative course was normal, and she was discharged in good condition on the tenth postoperative day. During a year's follow-up of this patient, no abdominal or pelvic symptoms recurred.

SUMMARY

The present case of lithopedion formation brings the total of authentic reported cases in the world's literature to 258. The lithopedion developed over an 11-year period. The initial attack of acute abdominal pain was undoubtedly the rupture of an extrauterine pregnancy with extrusion of the unattached fetus into the abdominal cavity, where it subsequently became calcified. The

subsequent periodic symptoms were due to recurrent attacks of pelvic inflammatory disease, secondary to the initial process. Menstrual disturbances were secondary to functional cysts of the ovaries and infection.

In follow up examinations of the patient for one year there was no recurrence of pelvic or abdominal symptoms.

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OINTMENTS IN THE DERMATOSES

Ointments are useful in the therapy of chronic dermatoses but frequently make acute dermatoses worse. Often a patient will tell his physician that the ointment that he applied to his poison ivy made him worse or that the salve that he purchased or which was recommended to him burned him and caused his eruption to spread. This is the most common complaint heard in a dermatologist's office. Ointments are mixtures of active ingredients in a grease or in a grease like substance. They are useful in some cases of psoriasis, in scabies, and in a few other skin conditions, but are in reality rarely necessary.

—GEORGE E MORRIS M D
in GP p 40 July 1954

Congenital Arteriovenous Aneurysm of the Retina

JOHN F. DIAS, Jr., M.D.

IN 1951 Rundlos and Falls in their review of the literature summarized the 31 cases of congenital arteriovenous aneurysm of the retina which had been reported up to that time and added three cases of their own. In 1954 Rifkin¹ added another case. The case presented below is in my opinion an example of an arteriovenous aneurysm of the retina which is a true congenital anomaly.

CASE REPORT

On 1 March 1946 a 29 year old staff sergeant was admitted to this hospital with a complaint of frequent syncope during the previous 14 months. The patient stated that vision in his left eye had been poor since infancy. He said that his father, though living and well had developed poor vision in the left eye at the age of 48 from looking at hot steel in his work as a blacksmith and in 1937 his vision was (left) 20/40 with glasses. There was no other family history of eye disease or congenital anomaly.

The general physical examination was entirely normal except that pressure on either carotid sinus brought on syncope. Roentgenograms of the skull showed no pathologic condition. The general course was uneventful and no treatment was given.

On the medical service it was concluded that there was insufficient evidence to make the diagnosis of a carotid sinus syndrome. The recurrent syncope was considered the probable result of hypotension due to postural effect and possibly due to elements of anxiety and asthenia in the patient as a result of prolonged hard work under tension.

Because of the history of poor vision in the left eye he was referred to the eye clinic and was seen in consultation on 11 March 1946. His vision was right eye 20/15 left eye faulty light perception. The external examination was normal, both pupils reacted to light. The consensual reflex was present. Examination of the media and fundi revealed normal appearance of the right eye. A large tortuous vessel which could be followed

from the disk around the macular region and back to the disk was observed in the left eye. The first portion was thick walled and lighter in color than the second part, which was of arterial hue but deeper in tint, the two portions were obviously artery and vein connected end to end. The second portion pulsated



Figure 1 Drawing of the left fundus of the patient showing (1) the dilated artery-vein anastomosis 1-1 diameter (2) an area of pigmented macular(?) degeneration (3) poor definition of the disk, (4) the retinal vessels somewhat smaller than normal and hidden in many places by thickening of the retinal stroma and (5) the area presented when the patient looks at the ophthalmoscopic light

when pressure was applied to the globe, the first did not. There was an area of degeneration at the macular region. A representation of the condition as seen with the ophthalmoscope is shown in figure 1. An attempt was made to locate a retinal camera with the idea of photographing the lesion, but none could be found until after the patient was discharged and could no longer be located.

COMMENT

At the time this patient was examined I made a search of the literature and was much impressed by the monograph on this condition by Wyburn Mason.³ I was influenced to delay reporting this case by this author's opinion that most of the reported cases were probably early cases of von Hippel's disease and would have been so revealed by a follow up of several years. Unfortunately, because I have been unable to communicate with this patient, a follow up is impossible.

In my opinion this was a true congenital anomaly in that an artery and a vein became connected without a capillary bed between and gradually enlarged to the size observed. The lighter color of the superior portion of the loop I believe was due to the presence of thicker musculature which also prevented collapse of the loop when intraocular tension was increased by pressure on the globe. The inferior portion filled with arterial blood had a deeper tint because of its thinner wall which allowed pulsation to show when outside pressure was applied.

Of all the cases illustrated in the literature the case of Rentz most resembled the one reported here. The condition of Stokes' patient was also similar although the vessel had a smaller loop. Both these patients, however, had good vision.

I believe that this condition of arteriovenous aneurysm of the retina is more common than is ordinarily supposed. Undoubtedly many cases in which enlargement of the main vessels is slight are missed in a hasty examination of the fundus; others may be observed but not reported.

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It is necessary to be reminded periodically that the practice of medicine does not consist entirely of miracles, magic bullets, or nuclear physics. Gowers' observation is still true. He said: "If every drug in the world were abolished, a physician would still be a useful member of society."

—ROBERT J. NEEDLES, M.D.

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 p. 586 Oct. 9, 1954

PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Navy and Air Force have recently received temporary promotions to the rank indicated

Medical Corps

Robert H. Adams	May	USAF
William M. Ady	Jr.	Capt. USAF
William Aldis	Lt.	Comdr. USN
Jam. F. Alis	Jr.	Capt. USAF
Newton W. Allbright	Lt.	Comdr. USN
John J. Allen	Capt.	USAF
Claude T. Anderson	Capt.	USAF
Donald C. Adso	Lt.	Comdr. USN
Donald B. Bak	Capt.	USAF
Ameo L. Barretto	Lt.	Comdr. USN
Billy J. Berman	Capt.	USAF
John M. Bill	Lt.	Comdr. USN
Charles C. Benton	Lt.	Comdr. USN
Henry C. Bernberg	Jr.	Lt. Comdr. USN
Eugene Berger	Lt.	Comdr. USN
Harry A. Bliss	Lt.	Comdr. USN
Henry H. Boyer	Lt.	Comdr. USN
Franklin T. Byer	Lt.	Comdr. USN
Richard B. Biddenbaugh	Lt.	Comdr. USN
Edward J. Bow	Capt.	USAF
Robert R. Burwell	Capt.	USAF
John O. Casy	Lt.	Comdr. USN
Donald J. Cluskey	Lt.	Comdr. USN
Graeme C. Cogges	Capt.	USAF
Jam. S. Coor	Lt.	Comdr. USN
Wyndon D. Courtney	Lt.	Comdr. USN
George F. Crick	Lt.	Comdr. USN
John F. Curtin	Jr.	Lt. Comdr. USN
Richard C. Daarud	Capt.	USAF
Herbert A. Donemann	Capt.	USAF
Robert M. Dean	Capt.	USAF
Paul F. Del	Lt.	Comdr. USN
Walter W. Deway	May	USAF
Alonzo N. Donnell	Jr.	May USAF
John J. Driscoll	Lt.	Comdr. USN
Jack L. Eas	Lt.	USAF
Charles M. Earley	Jr.	Capt. USAF
Earl H. Eaton	Jr.	Lt. Comdr. USN
Victor E. Eichman	Jr.	Lt. Comdr. USN
Ivern S. Erickson	Capt.	USAF
Montgomery Estridge	Lt.	Comdr. USN
Halward G. Faaland	Comdr.	USN
Ralph Fargotstein	Lt.	Comdr. USN
John F. Fite	Capt.	USAF
Arnold F. Feldman	Capt.	USAF
Curzon C. Fenn	Jr.	May USAF
John C. Finegan	Capt.	USAF
Lewis Florence	Capt.	USAF
Adolph A. Flores	Jr.	Lt. Comdr. USN
Simon F. Fricks	Capt.	USAF
Thomas F. Gallagher	Jr.	Lt. Comdr. USN
Murray Gasque	Jr.	Lt. Comdr. USN
Lou H. Gessay	Lt.	Comdr. USN
Bernard E. Gorton	Capt.	USAF
Thomas S. Gregg	Capt.	USAF
Jame D. Grinn	Lt.	Comdr. USN
William A. Hall	Lt.	Comdr. USN
Joseph Harrison	Jr.	Lt. Comdr. USN
Ernest R. Hartmann	May	USAF
Donald H. Harwood	Lt.	Comdr. USN
Fred W. Hauser	Lt.	Comdr. USN
Frank R. Hendrick	Lt.	Comdr. USN
Robert E. Hinkel	Capt.	USAF
Frederick W. Holcomb	Jr.	Lt. Comdr. USN
Winthrop C. Hoggood	Lt.	Comdr. USN
Thomas C. Hutton	Jr.	Lt. Comdr. USN
Charles S. Hoyt	Capt.	USAF
Mile H. Huds	Lt.	Comdr. USN
Graet B. Hugh	Lt.	Comdr. USN
Wyn P. Hyatt	Lt.	Comdr. USN
Robert B. Isham	Lt.	Comdr. USN
John J. Job	Lt.	Comdr. USN
Rodney M. Jarvis	Lt.	Comdr. USN
Harry A. Jukin	Lt.	Comdr. USN
Charles H. Jessup	Lt.	Comdr. USN
Charles A. Johnson	Jr.	Lt. Comdr. USN
Wendell A. Johnson	Lt.	Comdr. USN
Furness W. Johnston	Capt.	USAF
William M. Johnston	Capt.	USAF
Edward A. Jones	Comdr.	USN
Peter H. Joss	Lt.	Comdr. USN
Louise Kagana	Lt.	Comdr. USN
Robert E. Kating	Lt.	Comdr. USN
Charles E. Kee	Lt.	Comdr. USN
Edward A. Keenan	Jr.	Lt. Comdr. USN
William F. Kisch	Capt.	USAF
John C. Kuppinger	Lt.	Comdr. USN
John N. Langstaff	Lt.	Comdr. USN
Walter W. Larsen	Capt.	USAF
Joseph H. Latona	Lt.	Comdr. USN

Medical Corps—Continued

Fed k Lerma Lt. Comdr USN
 Da d M L l J Lt. Comdr USN
 William A L t z b e g Lt. Comdr USN
 Dougl H L wrey Capt. USAF
 Al d D L wy J Lt. Comdr USN
 Edw d C W Lun Lt. Comdr USN
 William G Lyl Lt. Comdr USN
 William G M l Capt. USAF
 Angel J M glia Lt. Comdr USN
 W yn B Mart Lt. Comdr USN
 Wilford E Mar yn, Lt. Comdr USN
 F k G Marx Capt. USAF
 F D M Carthy Lt. Comdr USN
 J b J M D nald, Lt. Comdr USN
 Thom R M Donn ll Lt. Comdr USN
 Thomas R M Elhe y Capt. USAF
 Thomas H M Guiz Lt. Comdr USN
 J h F M V y Lt. Comdr USN
 Wood ow W Me Lt. Comdr USN
 Abr ham A. M k lburg Lt. Comdr USN
 Karl F M nk, Lt. Comdr USN
 De Neye J Lt. Comdr USN
 Ma l M h l Capt. USAF
 David R Mill d J Lt. Comdr USN
 W l l a m J M g a b b Lt. Comdr USN
 H r m a n R. M o e J Lt. Comdr USN
 R chard h. M g a n Lt. Comdr USN
 J h n P Mur y Capt. USAF
 S mo D Mur y Lt. Comdr USN
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 R h a d W Olm ed Lt. Comdr USN
 Cal R. Ope h a w Lt. Comdr USN
 J ph P d v a Lt. Comdr USN
 Harold P Par Lt. Comdr USN
 Antho y J Par Lt. Comdr USN
 Roy W Park Lt. Comdr USN
 J h k Pear Capt. USAF
 J me H A P k J Lt. Comdr USN
 Elmer D. P lly Capt. USAF
 Ar hur P n, J Capt. USAF
 M ur F P ll Lt. Comdr USN
 Harv y H. Perma Lt. Comdr USN
 P ul C. P rs Capt. USAF
 William E. P n, Capt. USAF
 O n P ke Lt. Comdr USN
 Pearl H P rs Capt. USAF
 J b D P Lt. Comdr USN
 J h n B. Plauch Lt. Comdr USN
 J h n E. Pul ski, Lt. Comdr USN
 Al M R b e o, Lt. Comdr USN
 Cha l P Roo J Comdr USN
 Sol mo R b e g Lt. Comdr USN
 Da d B Rul n, Lt. Comdr USN
 Donald C. Sama n, Lt. Comdr USN
 Eug W Saus Lt. Comdr USN
 An h y T Sc fa Lt. Comdr USN
 J na G Sc Lt. Comdr USN
 P Sch l b g Lt. Comdr USN
 A hur L. Sche bel Lt. Comdr USN
 P ul R Scht b Lt. Comdr USN
 Bl d H. Schwa ng Maj USAF
 Rob G Schul z, Lt. Comdr USN
 Lyma J Sc p et M, USAF
 H ma S. Shapir Lt. Comdr USN
 J ho E. Sha ta J Lt. Comdr USN
 J h n H Shell y Lt. Comdr USN
 J m R Silbe Capt. USAF
 R bl y D Smith III Capt. USAF
 F alkya C. Spir Maj USAF
 h ma W tsk Lt. Comdr USN
 P lha P Stapl J M, USAF
 Arthur S f l Lt. Comdr USN
 Max A. S Capt. USAF
 J k P St r g Capt. USAF
 Alex d C. Stua t, Capt. USAF
 George C. S Lt. Comdr USN
 M l n R. Swaff d Capt. USAF
 Dani l M Thoma Lt. Comdr USN
 Geo g P Th ma J Lt. Comdr USN
 W l D Thoma Lt. Comdr USN
 Cha l R. Thom Lt. Comdr USN
 J me H. Thorp Capt. USAF
 R bet D T w Capt. USAF
 B na d Tuu k Lt. Comdr USN
 Stanl y Turk l Lt. Comdr USN
 Al C. Tw Lt. Comdr USN
 J m R. Upp Capt. USAF
 Herbert V lk, Lt. Comdr USN
 Thoma E. V nd Har Capt. USAF
 R hard L. Voo b Capt. USAF
 J h W W bl, Lt. Comdr USN
 Julia E W rd Capt. USAF
 All S. W d Maj USAF
 By v W b y Lt. Comdr USN
 Fra P A. William Lt. Comdr USN
 Gerald E. W ne get Comdr USN
 Calv W Woodruff Lt. Comdr USN
 Mill ng t O Y ung Lt. Comdr USN
 Cha l M. I. Za gl Lt. Comdr USN
 R y W Zimme J Capt. USAF

Dental Corps

Thad L. Anr ws Capt. USAF
 Edward D Ayt Capt. USAF
 Frank E. Bar nge Capt. USAF
 Be tram R. Bohn, Capt. USAF
 Watt J B r u s Lt. Comdr USN
 Isra l Coope Lt. Comdr USN
 Edwa d E. Da Maj USAF
 Gr dy D Donatha J Lt. Comdr USN
 Raym nd C. Duk Capt. USAF
 Donald F F Lt. Comdr USN

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Paul Foreman *Lt. Comdr USN*
 Irving S. Glasner *Lt. Comdr USN*
 David Green, *Lt. Comdr USN*
 Joseph G. Hancock *Lt. Comdr USN*
 Edward G. Hutton, *Lt. Comdr USN*
 George W. Johnson, *Lt. Comdr USN*
 Frank M. Lapeyre *Lt. Capt USAF*
 Gustaf L. Loff *Lt. Comdr USN*
 John L. Luca *Capt. USAF*
 Van D. McCool *Lt. Comdr USN*
 Harold E. Milkey *Capt. USAF*
 Max B. Musteer *Lt. Comdr USN*

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 John R. Saunderson *Capt. USAF*
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 John A. Schroeder *Lt. Comdr USN*
 Charles T. Schwetka Jr. *May USAF*
 Richard A. Smith *May USAF*
 Charles P. Thomas *Lt. Comdr USN*
 Gerald S. Wank *Capt. USAF*
 Charles L. Williams *Lt. Comdr USN*

Medical Service Corps

Albert L. Anderson *Lt. Comdr USN*
 Gerald J. Armatas *Capt. USAF*
 Carl P. Calhoun *Lt. Comdr USN*
 Pierce F. Carney *May USAF*
 William H. Coffman *May USAF*
 Charles M. Daniels *May USAF*
 Malcolm W. Day *Capt. USAF*
 Raymond C. Decker *Capt. USAF*
 Edward Dominguez *Lt. Comdr USN*
 James R. Gambel Jr. *Capt. USAF*
 Keith C. Gillitt *Capt. USAF*
 Edmund H. Gleason *Lt. Comdr USN*
 John L. Granger *May USAF*
 David F. Hersey *Capt. USAF*
 Wynne B. Hewitt *Lt. Comdr USN*
 James W. Kind *Lt. Comdr USN*
 Joseph L. Lester Jr. *Capt. USAF*
 Charles W. L. *Lt. Comdr USN*
 Ernest W. Linder *Capt. USAF*
 Samuel C. Marcus *Lt. Comdr USN*
 Leonard E. McClung *1st Lt. USAF*

Richard E. McKenzie *Capt. USAF*
 John S. McNeil *1st Lt. USAF*
 Philip A. Palumbo *Capt. USAF*
 Charles L. Patterson *Lt. Comdr USN*
 John H. Paulk Jr. *May USAF*
 Marvin C. Reed *Capt. USAF*
 Charles A. Rice *Lt. Comdr USN*
 Robert F. Riggs *Lt. Comdr USN*
 Robert J. Rife *May USAF*
 Joseph D. Rogers *Capt. USAF*
 Marvin L. Scott *Capt. USAF*
 Ruth C. Shattley *Capt. USAF*
 Malcolm F. Slayton *May USAF*
 William A. Staub *Capt. USAF*
 Charles J. Stiffen *May USAF*
 L. L. B. Thomas *Capt. USAF*
 James E. Thompson *Lt. Comdr USN*
 Dominic A. Vaval *1st Lt. USAF*
 Charles R. Wynnman *Lt. Comdr USN*
 Joe D. White *Capt. USAF*
 Chester D. Worth *Lt. Comdr USN*

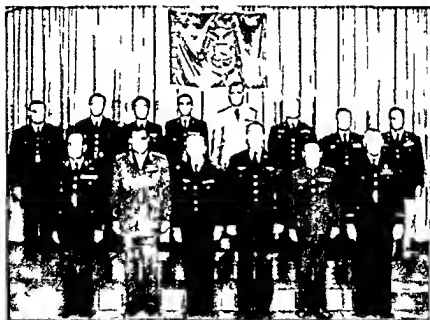
Nurse Corps

Mary E. Aldhize *Capt. USAF*
 Virginia M. Alessi *Capt. USAF*
 Rita A. Agate *1st Lt. USAF*
 Barbara W. Atkins *Capt. USAF*
 Rita J. Bell *Capt. USAF*
 Ralph B. Bell *Capt. USAF*
 Dorothy A. Berman *Capt. USAF*
 Ellen M. Davidson *Capt. USAF*
 Edna F. Farrell *Capt. USAF*
 Douglas J. Farrell *Capt. USAF*
 Rosemary G. Ricketts *Capt. USAF*
 Dorothy B. Garrett *Capt. USAF*
 Norma H. Kolodziejczyk *1st Lt. USAF*
 Theodore F. Lattimore *Capt. USAF*
 William S. Lewis *1st Lt. USAF*
 Marc L. Longton *Capt. USAF*
 Susan E. Luck *May USAF*

Dorothy E. M. Hughes *Capt. USAF*
 Carl B. Meyer *1st Lt. USAF*
 Lilly A. Nkata *1st Lt. USAF*
 Rita O. Har *Capt. USAF*
 Clara Pett *Capt. USAF*
 Sarah J. Rafferty *1st Lt. USAF*
 John H. Richards *Capt. USAF*
 Hermania D. Rogers *Capt. USAF*
 Regina M. Schaffert *Capt. USAF*
 Ruth F. Schneider *Capt. USAF*
 Mildred F. Schooley *Capt. USAF*
 Dorothy L. Shild *Capt. USAF*
 Ruby L. Thacker *Capt. USAF*
 Sarah P. Wells *Capt. USAF*
 Mary E. White *Capt. USAF*
 Annie V. Williams *Capt. USAF*
 Hilary S. Willman *Capt. USAF*

OFFICERS OF 25 NATIONS, INCLUDING 13 SURGEONS GENERAL VISIT USAF BASES

The surgeons general of 13 allied air forces and 14 other foreign military medical officers representing 25 countries were the official guests of Major General I D n C Ogle USAF (MC) Surgeon General U S Air Force on a visit in March to Air Force bases in Alabama Texas and Ohio following the twenty sixth annual meeting of the Aero Medical Association in Washington D C



The surgeons general of 14 air forces were photographed at the U S Air Force School of Aviation Medicine 26 March 1955. From left to right: Brigadier General Miguel Lafont Spanish, Brigadier General A M Gena Egyptian, Major General P Bergeret French, Major General D C Ogle United States, Major General H W B L R p b l f Chinese, Brigadier General Johan E. Brouwer Netherlands, Major General I f t o g h t, Captain Jourdai Ad S y a, Major S e i a o Colombian, Air Force Commodore Soebard Hindjoloekito Indonesian, Group Captain E A R Ad b Indian, Major R H Bathgate-Johnston Rhodesia and Nyasaland, Colonel T Y R b i e French, Colonel Pye g-Nai Pak Republic of Korea, Lieutenant Colonel P lagio G Pol n e a, and Phil p p e s.

Traveling by military aircraft the group inspected the medical training and research facilities at the Gunter Branch of the School of Aviation Medicine Gunter Air Force Base Alabama the U S Air Force School of Aviation Medicine Randolph Air Force Base Texas and the Aero Medical Laboratory Wright-Patterson Air Force Base Ohio

A MESSAGE FROM THE A M A

The May issue of this *Journal* carried a brief review of the report made by the Hoover Commission on Federal Medical Services as it was applicable to our veteran population. We further discussed the need for conservation of this medical manpower and resources wherever appropriate and suggested that such economies could be used to increase civil defense preparedness.

As to the findings of the task force of the Hoover Commission on Federal Medical Services in the military, the report noted that the Department of Defense is in a declining economy in the field of medical care. In spite of this, however, the report leaves no doubt that the Department of Defense comes in for its share of lack of coordination and the huge wastes in Federal medical services.

A summary of three of the five metropolitan areas surveyed with respect to Federal hospital services showed a very high number of unused beds for the Armed Forces. For example, in the San Francisco area there were 11 Department of Defense hospitals with 7,606 beds of which 4,661 were unused. The New York area military bed capacity was 2,238 but 2,009 were unoccupied. In the Norfolk area, with 3,051 hospital beds, there were 1,458 unused. By services, the Army had 46 percent of its beds occupied in the San Francisco area while the Navy and Air Force each had only 36 percent occupancy. In the New York area the Army had a 43 percent occupancy, the Navy, 37 percent, and the Air Force, 48 percent occupancy. At the Norfolk area the Navy had a 70 percent hospital bed occupancy, but the Army and Air Force each showed only 20 percent occupancy of their beds.

Turning to the hospital construction program of the military services, the survey indicated further lack of coordination and waste. Of 106,403 beds in 1952, only 57,514 were occupied. In the same year expenditures for hospital construction amounted to \$11,822,000. In 1953 military hospital beds totaled 102,280 with only 49,520 occupied; nevertheless hospital construction was \$6,071,000. In 1954, there were 91,097 beds with 39,626 in use, and construction reached \$49,612,000. Estimates for 1955 are hospital construction, \$62,227,000, total of 93,152 beds with 58,899 unused.

Such waste is not limited to money alone. The technical personnel required to operate these partly filled facilities is a drain on the medical and health technicians much needed by our civilian population. If it be argued that these excessive practices are needed against war emergency, can it not be answered that had these funds been used to relieve the civilian situation the civilian hospitals would equally be available for war emergency.

A most interesting and revealing item of the report concerns the length of patient stay in Federal hospitals. For an appendectomy in a civilian hospital the average length of stay was found to be 7.6 days while in an army hospital active duty personnel spent 19.6 days and others excluding veterans spent 9.9 days for an appendectomy. In a naval hospital the time was 20.3 days for active duty personnel and 9.6 days for others excluding veterans. Civilians in a general hospital spent but 1.4 days for a tonsillectomy but in an army hospital active duty personnel spent 16.1 days and others 3.0 days while at a naval hospital the average was 13.3 days for active duty personnel and 2.5 days for others. For hemorrhoidectomy and herniotomy (inguinal) a similar sizable increase was indicated by the military in comparison with civilian hospitals.*

Military personnel on active duty receive relatively large amounts of hospital service—an average of 8 days a year (exclusive of battle casualties) as compared to 1 day a year in general hospitals for the United States population,* the report stated.

Medical care given to dependents of service personnel is large and has grown enormously in recent years. On an average day in 1953 they occupied 6,300 beds in military hospitals and received 73,000 outpatient treatments. In 1946 some 42,000 babies were born in military hospitals in the United States. In 1953 the number was over 140,000.

The report recommended that the medical and hospital services of the three military services be modified into a much more closely coordinated pattern in which one service would be given responsibility for medical care in each region of the United States. Within this broad recommendation several specific recommendations were made. Armed services training programs for medical officers were also recommended for strengthening.

This figure is taken from paragraph 4, for paragraph 5, between July and August 1949, re from table published in the first report of the Hoover Commission. March 16, 1949—Editor.

COMMENT ON A M A MESSAGE

The preceding article, "A Message From the A M A," was submitted by the Secretary of the Council on National Defense of the American Medical Association and is published at the request of the Assistant Secretary of Defense (Health and Medical). A message from the A M A has been printed in the *Journal* each month since January 1954. This was done to facilitate the communication of information from organized medicine to the physician in uniform.

In the present instance, special comment appears to be necessary. The current communication largely consists of paraphrases or direct quotations from the report on Federal Medical Services made by the so-called "Hoover Commission" in February 1955 (incorrectly attributed to the "task force" report). As such, and because of the fragmentary reporting of items touched upon, it tends to perpetuate and actually further exaggerate unsubstantiated charges of lack of coordination, waste, excessive personnel, and excessive bed capacity in the military services. These charges are made in broad, general terms, while illustrations offered to substantiate them either do not accord with the facts or rest on very serious misinterpretations of the available facts.

In paragraph 2 the message states that there are "huge wastes in Federal medical services." However, repeated comparisons of governmental with private hospital programs have demonstrated that the navy medical care program for example, utilizes less personnel and achieves a lower cost per patient day than any other comparable program, while maintaining the highest quality standards. During fiscal year 1954, the cost per patient day in naval hospitals was \$14.84. This compares most favorably with published costs in private hospitals ranging from \$18.69 to \$27.55 per patient day. The all inclusive charge of huge waste is not justified.

Paragraph 3 recites statistics designed to demonstrate "a very high number of unused beds for the Armed Forces," but fails to mention that a large proportion of the "unused beds" are strictly in moth ball status. They are not operating beds, are not budgeted for, and are not staffed. They practically all are of temporary construction, remaining from World War II. Their association with operating facilities is solely for security and fire watch. They cost relatively little to maintain and have been retained specifically for use in emergency.

Nowhere in the recitation of occupancy figures ranging from 90 to 70 percent is there even a hint of the fact that these statistics are based on total *constructed* bed capacity, including temporary structures held over from World War II or earlier, as admirably economical insurance against disaster. When actual *operating* beds are considered as in Table 14 on page 52 of the report of the Hoover Commission Task Force of February 1955 it is seen that in 1954 there was 81 percent occupancy of navy beds and that the average for all the Armed Forces was 72 percent.

The idea advanced in paragraph 4 that new hospital construction constitutes incoordination and waste disregards the fact that during the period cited (1952-1955) new construction at least for the Navy consisted of the replacement of obsolescent hospital facilities. During the same period constructed navy beds actually decreased by 13.951.

A serious error appears in paragraph 5 in charging excessive practices in use of personnel. It is stated that "The technical personnel required to operate these partly used facilities is a drain on the medical and health technicians much needed by our civilian population." The fact is that no technical personnel are being used to operate unused facilities, staffing being related to the patient load, *not* to bed capacity.

Finally in paragraph 6 many statistics are cited to show that after certain surgical operations military personnel on active duty are hospitalized longer than civilians. No reference is made to the fact that these figures refer to patients discharged in early 1946 before some of the more recent medical advances. More importantly, neither this nor the following paragraph mentions that whereas a civilian can convalesce at home under the care of his family, military personnel usually cannot be discharged from hospital until fit for at least limited duty.

There is another point which is ignored in these comments and that is that military medical facilities *cannot* be compared to civilian medicine at all points precisely because as a Defense organization they must be like the firemen and fire engines in our home town always prepared for a holocaust.

Medical officers should recognize that the American Medical Association in this instance is not speaking for all sections of the profession.

B. F. AVTRY
Captain (MC) USA
Associate Editor

36 NEW SPECIALISTS IN AVIATION MEDICINE

Thirty six Medical Corps officers of the U S Navy and Air Force have been certified in aviation medicine, following examinations given in Washington, D C , on 17, 18, and 19 March 1955, according to an announcement by Dr Ernest L Stebbins, secretary of the American Board of Preventive Medicine The new specialists are

G orge F Bais III Col USAF
 Lynn S Beals Jr Capt USN
 Edward L Beckman Comdr USN
 Laurence A Bilotta Col USAF
 Robert F Carmody Capt USN
 Joseph A Connor Jr Lt Col USAF
 Anthony C Czerwinski Col USAF
 William A DeFries Lt Col USAF
 Norman R Drummond Lt Col USAF
 John W Epton Lt Col USAF
 Lindsay J Ertz Col USAF
 Everett C Frie Col USAF
 Richard L Fruen Capt USN
 Lucio E Gatto Col USAF
 George A Goddard Lt Col USAF
 Philip G Kilgus Lt Col USAF
 Wayne E Klein Capt USN
 Frank H Laney Col USAF
 Robert B Lautenschlager Comdr USN

Raymond A Lawn Col USAF
 Emmett C Lentz Col USAF
 William H McCrill Col USAF
 Sherman M Paddy Comdr USN
 Charles E Pettit Comdr USN
 Bradley W Prio Lt Col USAF
 Courand N Roth Lt Col USAF
 Vance E Sentz Comdr USN
 Jack C Shrader Lt Col USAF
 David G Simmons Maj USAF
 Fredrick S Spiegel Maj USAF
 Henry F Steinbock Lt Col USAF
 Clarence A Timman Col USAF
 Albert W Vassile Lt Col USAF
 Hamilton B Webb Lt Col USAF
 Cal E Wilbur Comdr USN
 Paul E Wright Lt Col USAF

DEATHS

SMITH Edwin Carl Captain MC USAR Manlius N Y 548th Medical General Dispensary Korea, graduated in 1947 from the University of Rochester School of Medicine and Dentistry appointed a first lieutenant 17 August 1953 ordered to active duty 1 July 1954 died 30 March 1955 age 32 in Korea of a gunshot wound

THE MEDICAL OFFICER WRITES

Articles Published in Other Journals

Adl R H C p MC, USA, Ma t F E J Lt Col MC USA, d W P F
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W J L C l USAF (NSC) R l f m l gyl pr med ln p gr m f
A med F Mil Med 116 119-124 F b, 1955

Ca P R Capt MC, AUS, nd W l H M L C l MC AUS P eumat i
y d l pot f h man. Surgery 37 255-259 F b 1955

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USAF (NC) P y W D Cap USAF (NC) S g l A C. C p MC AUS, S on
C A Cap MC, AUS Rammelk mp C, IL J H H B Maj MC AUS Stcl
B L C p USAF (NC) W mak L W Cap MC AUS d R h E O M J
MC AUS Eff f yr yr yel b py f tr p oc l ure th id ne f
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med m pr gr m f h med f re M L Med 116 127-130 F b, 1955

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Down C. R J MC USA H p m A R Cap MC USA Todd, W A J
C L J C USA nd Mathew C. J A ry m f pl ry Ann Surg 141
268- 72 F b, 1955

Reviews of Recent Books

SHOULD YOU DRINK by *Charles H. Durfee* Ph D 152 pages The Macmillan Co New York N Y 1954 Price \$2.49

This small volume is written for and about the problem drinker. It is a warm understanding book and also an optimistic one written in nontechnical language and intended as an informal discussion of the symptoms of compulsive drinking and of rehabilitation through therapy.

Without probing deeply into causes, the author proposes that compulsive drinking is a psychologic problem—a habit system developed through learning and supported by escape motives. The treatment is then one of re-education in a supportive environment. Such common techniques as reassurance and inopereration are used, but certain innovations are also suggested. In the informal atmosphere of a "country inn" the patient engages in congenial occupations and long, often unscheduled conversations with the therapist. The patient is free to leave if he chooses, return to the city to business obligations, attend social gatherings, and drink alcoholic beverages. The author believes that because the patient must live in a drinking society, he cannot be expected to work through the problem in isolation. Most of the patients, however, voluntarily cease drinking early in therapy.

The professional reader will not find this a satisfying book. Few data are presented, and the outline of the remedial work is so sketchy as to leave most questions unanswered. One wonders how the author's methods would function in a rushed city clinic or in a class of drinkers who cannot afford to snjuro in the country. These criticisms are not applicable, however, for the book is not intended as a technical treatise. It should provide food for thought as well as hope for the audience to which it is directed. —**HAROLD L. WILLIAMS** Capt. MSC USA

THE YEAR BOOK OF OBSTETRICS AND GYNECOLOGY (1954-1955 Year Book Series) Edited by *J. P. Greenhill* M.D. 544 pages The Year Book Publishers, Inc. Chicago Ill. 1954 Price \$6

This is an illustrated abstract of the major portion of the world's literature of the past year, concerning obstetrics and gynecology. The editor has selected each article for some important contribution it makes. In addition, he discusses and compares them with previous articles and with his own broad experience as teacher and author.

Authors of scientific papers differ in their ideas and conclusions, and even in their statistics, so that anyone who abstracts their articles and contributes his own critique must employ a sense of constructive comparison and a very conservative outlook. This the editor has done.

admirably. He has selected his material from about 40 American and almost an equal number of foreign journals. The *American Journal of Obstetrics and Gynecology* and *Obstetrics and Gynecology* provide over 150 articles; however, all representative foreign and domestic scientific journals are well represented. An alphabetical subject index and an author index is included.

Among almost 200 papers on obstetrics, the subject of labor, including its management and complications, contributes 75 papers, and pregnancy, its physiology and complications, 94. Of over 175 articles about gynecology, there are more than 40 papers on malignant tumors, and on the subject of infertility almost the same number. Endocrinology has been held to a conservative nine papers.

This yearbook fills a definite need as a handy guide and reference to busy physicians, but of course an abstract is not a substitute for the original article.—EDWARD T. KNOWLES, Capt (MC) USN

GROWTH AND DEVELOPMENT OF CHILDREN by Ernest H. Wolff, M.D.
 d G g H L w y M D 2d d 150 296 p g Il t t d Th Y
 B k P bl h I Ch g Ill 1954 P \$7

The major improvement of this volume over the first edition is the addition of a chapter on facial growth and development. The chapter includes dentition along with an excellent discourse on malocclusion which should be of considerable interest to the pediatrician.

The chapter on premature development is divided into systems and the opinions on the causes of prematurity and differences in maturity and immaturity are well done. The chapter on behavior development includes not only the guidance of infancy, preschool period and childhood but adolescence as well. The statement that overemphasis of problems in the period of adolescence may do more harm than good may be challenged by some readers. There are 70 figures and 48 tables in the book. Some readers would have preferred fewer height-weight tables for easier reference, but most of the charts are important for a book of this type.

This book should serve a useful purpose for the student and resident as well as for the pediatrician and other clinicians in the branches of medicine closely related to this specialty.

—SHERL J. WINTER, Capt (MC) USN

THE PSYCHOLOGICAL VARIABLES IN HUMAN CANCER, edited by Joseph A. G. G. Ill, d F k J K k 135 p g U ty f C l f
 P B k I y d L A g I Calif 1954 P \$3

This is an edited symposium at the Veterans Administration hospital in Long Beach, Calif., October 1953. The book is divided into six chapters, each with single author and usually one or more discussants. It is not indexed but references appear at the end of each chapter. In reporting research projects, considerable psychological test data with in-

terpretation and discussion are included. The chapter devoted to autonomic functions contains several tables and graphs.

The title is provocative but nothing is settled by the participants nor does it appear that the intent was such. The significance of the book is that it records experimental data on the subject and reveals the open-mindedness of the very capable discussants.

The book is stimulating and easy to read. It will undoubtedly be the object of criticism and attack which is traditional for any new approach to cancer research. —JAMES M. BAILEY Lt Col MC USA

TREATMENT OF ACUTE POLIOMYELITIS edited by William A. Spencer
M D 134 pages illustrated Charles C Thomas Publisher Springfield Ill 1954 Price \$3.75

Anyone who has known the agonizing perplexity of treating the patient with bulbar poliomyelitis will keenly appreciate this synopsis which is based on experiences with 1 000 patients with "suspected" poliomyelitis admitted to the Southwestern Poliomyelitis Respiratory Center in Houston. Of these 246 were ultimately classified as severely ill with poliomyelitis. The acute and postacute phases of the disease are discussed in detail. Most of this book is devoted to the diagnosis and care of patients with respiratory complications and particular emphasis is given to the use of the various types of respirators currently available. The care of the patient with tracheotomy, indications for this procedure and the problems involved in its termination are well summarized. Most of this information will be helpful in the management of patients with or without tracheotomy requiring care in a respirator. The sections concerning metabolic and circulatory complications leave something to be desired but this is more a reflection on the general state of knowledge in the field than on the editor or the contributors who are to be congratulated on the emphasis which they have given to the diagnosis and management of the emotional and social aspects of the disease.

The volume is inexpensively bound. The material is presented as a series of synoptic tables accompanied by cursory notes of explanation. There is a useful appendix which includes tables of average ventilatory requirements, salt and water requirements, muscle re-education programming, muscle testing and programs for maintenance of joint range of motion. A bibliography of 24 references is included. The book is of interest and importance as a guide to all those not fully acquainted with the care of the seriously ill patient with poliomyelitis, particularly interns and junior residents assigned to medical and pediatric services. —JOHN A. SPITZNAGEL, M D MC USA

INTERNS MANUAL by Arthur Bernstein M D 297 pages illustrated Year Book Publishers Inc Chicago Ill 1954 Price \$3

This small paper-bound book is the manual for interns at the Cook County Hospital in Chicago and represents a guide to the care of pa-

tients by the house staff of that institution. The author has organized the subjects alphabetically and uses many cross references to avoid repetition.

A remarkable amount of information in outline form is contained in this manual. The topics covered are many and varied and include such diverse subjects as blood dyscrasias, anesthesia, fractures, burn therapy, et cetera, thus representing the matters important to a house officer in the treatment of patients with routine as well as emergency conditions. Certain instructions may not apply so well to other institutions, but this does not detract from the value of the manual. The section on fractures is particularly well done, concise and complete, and is one feature that other house staff manuals often omit or cover only sketchily.

As a house staff manual this book is excellent and may be profitably used by all physicians for ready reference in emergencies, laboratory procedures, antidotes, fractures, and many other phases of medicine. It is small enough to fit easily into the doctor's medical bag.

—DAVID L. DEUTSCH, L. C. L. MC USA

HUMAN LIMBS AND THEIR SUBSTITUTES by P. I. E. Klopsteg, Ph. D.
 Second Edition by Philip D. W. L. M. D. 844 pages, illustrated by M. Graw Hill
 Book Company, New York, N. Y. 1954, Price \$12

This book is a report of the research and development program in artificial limbs conducted under the direction of the National Research Council since 1945. The text represents the combined efforts of 30 experts including surgeons, engineers, physiologists, psychologists, therapists, prosthetists, chemists, and manufacturers. As a result of this comprehensive research and development program, the latest components, mechanisms, and prosthetic methods are described. All aspects of the management of an amputee, including a definition of the problem, the team approach, the preoperative and surgical care, pain patterns, psychological adjustment, and fitting of and training for use of prostheses, are discussed. The influence of improved prostheses on sites of amputation is emphasized. Cineplastic techniques and fittings for the upper extremity are discussed, and the suction socket prosthesis for the lower extremity is fully evaluated.

The text is amply illustrated with graphs, line drawings, and half-tones. The text is written in clear, not too technical language which makes it easy to read. A few minor errors in indexing and labeling do not detract in any way from the book which, in general, is well indexed. Each section is augmented by an excellent bibliography. All interested in the problem of amputations should find this an instructive and valuable reference book which should be in the library of all those who have the occasion to participate in any phase of the management of amputees. —JOSEPH W. BATCH, L. C. L. MC USA

SUPERVISION OF NURSING SERVICE PERSONNEL by *Cecilia M. Perrodin*
R N M S De Paul University Chicago Ill 622 pages illustrated
The Macmillan Co New York N Y 1954

Supervision thoroughly understood and intelligently employed is a vital factor in providing the most effective nursing care in both large and small hospitals. In this book the author has "clarified the need, principles, technic and values of supervision in nursing service."

The purposes of this book are to demonstrate the nurse supervisor's role as a "harmonizer and key figure" between the administration on the one hand and the nursing personnel and patients on the other; to serve as a guide to hospital and nursing administrators, supervisors and teachers in this age of supervision; and to aid the student in nursing education programs by providing reference material on supervision as differentiated from administration.

The book is well written. Following each of the eight parts is an extensive bibliography to facilitate and encourage further reading and study. The discussions include the philosophy of supervision and the significance of psychology, sociology and leadership; the principles, both general and specific, of supervision; the contribution of education, business and industry; and the results of good supervision as seen in patient satisfaction, personnel stimulation and growth, administrative gains, good public response and the growth of the supervisor and supervision.

Nursing administrators, supervisors and educators will find this a valuable guide in developing and maintaining an effective supervisory program. To the student in nursing education and administration it will provide a much needed reference for supervision as it applies to the nursing service. —AILEENE BRINMER Maj, USAF (AFAC)

THE BANE OF DRUG ADDICTION by *Orin Ross Yost* M D 155 pages
The Macmillan Co New York N Y 1954 Price \$4

This book deals with the evils of drug addiction as they affect our civilization today. It is well organized and amply documented with vivid, selected case histories from the files accumulated by the author during 25 years of professional experience with a great number of addicts.

The underlying causes of addiction are emphasized and the medical profession is challenged to recognize the condition as a disease requiring prompt and proper treatment. The danger of spreading the disease, especially among adolescents, is pointedly described. The habit-forming drugs are classified and the criteria of addiction defined with illustrations by tables and outlines. The symptoms of addiction and the abstinence syndrome are adequately presented.

The chapter on treatment outlines the steps of withdrawal, rehabilitation and re-education. In view of the difficulty of carrying out these

measures and the high rate of relapses coupled with the all too frequent interference of relatives and friends the author concludes that regardless of the particular drug very few cases of drug addiction of long standing in adults are permanently cured. Consequently the real cure lies in prevention. The social moral medical legal and penal measures required for control of drug addiction are discussed in the last chapter. The book is easy to read and the format is excellent. There is an adequate glossary of the jargon of addicts and the index is complete. The book is recommended to all physicians for information and reference in the diagnosis and treatment of drug addiction. —DAVID C. GAEDE Capt (MC) USA

THE PYRAMIDAL TRACT by A. M. Lasik, M.D. Ph.D. American Lecture Series Publication Number 233 A Monograph The Banner Division of American Lecture in Anatomy Edited by Otto F. Kampfer, Ph.D. M.D. 166 page Chapter C Thomas Publisher Springfield, Ill. 1954 P \$4.75

The author's stated purpose in this monograph is "to collect and correlate the known facts on the pyramidal bundle in an attempt to ascertain its true status in medicine." As he says "it was one of the first fasciculi to be observed in man and it was assigned a major function. The results of numerous investigations over many years did not greatly alter the original concept of the tract until recently

In the early chapter the author describes the speculation over the centuries as to the reasons for paralysis contralateral to the side of brain damage. Then the history of the next 160 years concerning the gross observations and dissections of the tract is briefly discussed. Following this chapters are devoted to an historical account of histologic studies of the normal tract and an account of efforts to understand the pathologic lesions of this tract. The traditional signs and symptoms of pyramidal tract disease, surgical operations involving the tract and the results of animal experiments are then related. Also included are outlines of his pyramidal tract investigations in man and in animals and bibliography of 299 references.

Physicians concerned with paralysis secondary to disorders of the nervous system will find this small book of considerable interest.

—JOHN W. KENZLE Col (MC) USA

SENTENCE COMPLETION by James Quatter H. Isopplid, Florence R. M. I. America Lecture Series Publication Number 230 A Monograph in The Banner Division of American Lecture in Psychology Edited by V. H. Harrowe, Ph.D. 177 page Chapter C Thomas Publisher Springfield, Ill. 1954 P \$5.50

This monograph is an initial report on a new type of test in which the authors have selected 73 incomplete sentences which seem to call for relatively impersonal responses rather than for report on personal problems. After a brief discussion of the criteria used for selection of the statements a list follows of characteristic completions for each statement has been obtained from 1700 persons. The

technic of interpretation is demonstrated by a detailed analysis of one record and the presentation of 27 illustrative records from a wide variety of psychiatric patients

The use of indirect beginning of a sentence does not threaten the person as much as the direct type of opening and he is encouraged to give a wide variety of expression. This makes the test more flexible and produces more projective material than previous sentence completion tests. On the other hand the flexibility of the test reduces its objectivity and it will be difficult to determine the validity or reliability of the conclusions drawn from a single record. The authors are aware of this situation but take the view that the validity and reliability of projective techniques depend on the skill and training of the examiner using the technic.

The book presents interesting test material which indicates the test can be an effective economical instrument in the hands of an experienced clinician. Its simplicity and minimum of structured material however may be pitfalls for the inexperienced examiner.

—FRANK J HAMMER Capt MSC USA

FLUID THERAPY by James D Hardy M D 255 pages 77 illustrations
Lea & Febiger Philadelphia Pa 1954 Price \$5.50

The author has succeeded in presenting a concise discussion of total fluid therapy. The book consists of 19 chapters with chapter 1 devoted to the general physiology of body fluid metabolism. In a clear and simple manner there follows a discussion of fluid therapy that presents a classification of states of water and electrolyte imbalance and methods to diagnose and treat these derangements.

Special chapters are devoted to the management of clinical problems of fluid imbalance. Included are chapters on intestinal obstruction, burns, fluid therapy in infants, children and elderly persons and problems peculiar to urology, neurosurgery and orthopedics.

Nothing new or startling has been presented in this book. The reader is informed how to decide when a state of fluid imbalance exists and then is given a practical guide to therapy. The table of contents, a detailed outline of subject matter in each chapter and adequate references will provide students, interns, residents and practitioners of the medical and surgical specialties with a ready source of reference to all aspects of fluid therapy. —GEORGE F PEER Col MC USA

STELLATE GANGLION BLOCK by Daniel C Moore M D 280 pages Charles C Thomas Publisher Springfield Ill 1954 Price \$10.50

This is a first edition of a text concerning the technics for interruption of nerve impulses from the cervicothoracic sympathetic ganglion. The fundamentals of the anatomy and physiology of the cervicothoracic portions of the sympathetic nervous system are discussed including the necessary equipment, various types of drugs and ancillary diag-

nostic equipment needed. The second part includes the techniques used by the author and the signs and symptoms of a technically successful block.

An important chapter on complications outlines problems relevant to patient response to drugs, errors in technique and inadvertent involvement of adjacent structures in the field of injection. Part three of the volume ascribes the use of these techniques as applicable to diagnostic and therapeutic problems in more than 50 disease conditions associated with (1) vascular disturbances of brain, heart, lung, upper extremities and face; (2) overactivity of sweat and mucous glands; (3) bronchospastic conditions; and (4) cardiac arrhythmias of sympathetic derivation. The techniques of stellate ganglion block used by 33 other authors are described in their original details.

The illustrations, colored and black and white plates, are in excellent detail, accurate, expressive in design and purpose and follow the text so as to be useful. The index and bibliographies are very satisfactory. This text is adequate for the novice who may wish to learn the techniques of stellate ganglion block as well as for the consultant who may wish to become better informed as to the many possibilities in the application of this diagnostic and therapeutic instrument.

—HARVEY C. SLOCUM, C I MC USA

STANDARD VALUES IN NUTRITION AND METABOLISM, edited by E. H. C. Albright. M D 380 pages. W B Saunders Co. Philadelphia, Pa. 1954.

This book is a compendium of 160 tables of biologic data prepared by a large group of experts organized under U S Government auspices. There are 223 pages of tables and 16 pages of diagrams, with thousands of items of quantitative data and their bibliographic references. Much of the information deals with animals, plants, and microorganisms, although human data are also included.

This book represents a gigantic effort at correlating metabolic and nutritional information from the world's literature, and as such will be indispensable to the advanced research worker.

—S O WAIFE, Lt (MC) USNR

PSYCHIATRY AND COMMON SENSE, by C. S. Blum. M D 259 pages. The Macmillan Co. New York, N Y. 1954. P. \$3.

This book is written to make the various emotional illnesses more understandable to the layman. In order to do this, the author describes all psychiatric disorder in terms of organization, disorganization, and nonorganization of the personality.

The early chapters discuss personality development, including the behavioral disorders, some organic syndromes, and some psychoses and immaturity, and other neurotic and psychotic disorder. Other chapters discuss psychosomatic disorders, psychoses, and alcoholism. In the latter chapter, the author claims that 58 percent of 550 patients

remained sober under antabuse therapy. Another 20 percent had one or more relapses then received antabuse and remained sober. Thus the treatment was 78 percent effective. This suggests a more optimistic view of this problem than that voiced by other authors and might possibly be clarified if the author indicated his method of selection of patients, his follow up procedures, and the time interval.

The chapter on treatment is an orientation toward understanding and avoiding emotional disorders. Some comments may raise an occasional eyebrow as for example, it would seem then that the seeds of paranoid thinking are to be avoided.

In the final chapter the author discusses the personality of men in politics. The reviewer found little relationship between this chapter and the rest of the book and wondered how the observation that dominant persons tend toward positions of leadership contributes toward the implementation of his suggestion that certain types of wise and mature men might make sounder politicians.

While this book may have some value to the layman and possibly to the nurse who wishes a general orientation to psychiatry, I believe that it has little usefulness to the psychiatrist or to physicians in other fields. For the rare occasion when the patient is to be advised to read about psychiatry there are several other books which might be more suitable for this purpose and which present the concepts of psychiatry in a clearer fashion. —WILLIAM HAUSMAN May, MC USA

CLINICAL ORTHOPAEDICS by Anthony F. DePalma, Editor. 240 pages. Illustrated. J. B. Lippincott Co. Philadelphia, Pa. 1954. Price \$7.50.

This is the fourth of a series of publications which is sponsored by the Association of Bone and Joint Surgeons. To be fully appreciated, it must be remembered that each volume represents only a limited part of a long range plan designed to provide an outlet for orthopedic material of interest and to augment other channels of literature.

The book is divided into a section on joint fractures and dislocations and one on general orthopedic subjects. In general, each subject is well presented, adequately illustrated, and where applicable followed by an excellent bibliography. One who keeps abreast of current literature may be justly critical of the two articles on fractures of the patella which add little to this subject. Garrett Pipkin uses seven pages to discuss dislocation of the carpal lunate and a presumptive test for reduction. He de-emphasizes the value of good roentgenography in the management of this injury. Juan Farill describes still another method of treatment of congenital dislocation of the hip and admits the inadequacy of follow up studies in his patients. Francis W. Glenn's article on the antibiotics and chemotherapeutic drugs, and Harry C. Stein's discussion of preservation of foot function are excellent. These two articles are both highly informative and thought-provoking and will probably be read and reread with great interest by all who may

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Monthly Message

Dr Willard C Rappleye, in an address at the congress on Medical Education and Licensure 1954 narrated the history of medical licensure. Roger II of Sicily issued an edict in 1140 forbidding anyone to practice medicine who had not passed the necessary examinations. The Fourth Lateran Council in 1215 issued additional rules in regard to surgical procedures. Frederick II in 1224 extended the regulations promulgated by Roger II and even specified that the medical faculty of the University of Salerno should conduct the necessary professional tests. The educational component of medical training was clearly stated by specifying that a candidate must have studied philosophy for three years, medicine for five years and have practiced under a qualified physician for one year. Please note that those educational standards were proscribed 700 years ago.

Since then much effort has been expended in raising the quality of medicine. In 1307 the King of France established a Board of Surgery in Paris to examine and certify those who wished to practice surgery. Following this numerous Royal proclamations were issued dealing with surgery. In England both the University and barber surgeons had their own Boards which were eventually merged under the great charter granted by Henry VIII. This however was not altogether a happy marriage and for the next 200 years until the establishment of the Royal College of Surgeons in the 18th Century there were still many disputes among the Guilds.

In our own country the past 50 years have seen the abolition of the diploma mills and the steady elevation of quality in medicine and surgery. We must guard against overspecialization however and a return to the outmoded guild system toward which some of the Specialty Boards seem to lean. In the words of Santayana. These who cannot remember the past are doomed to repeat it.

Frank B Berry

FRANK B BERRY M D

Assistant Secretary of Defense
(Health and Medical)

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Foreword

The *United States Army Medical Journal* is the medium for the dissemination of material of administrative and professional interest to the personnel of the Department of Defense. The *Army Medical Library* (Hitherto *Medical Library*) is the Surgeon General's official library. It is the official library of the Medical Service Corps of the Army. For the medical specialists of the Army, Navy, and Air Force, the *Journal* is the official publication.

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A PSYCHIATRIC STUDY OF 55 EXPECTANT FATHERS

JAMES L. CURTIS *Captain USAF (A/C)*

DESPITE the fact that expectant fathers are rarely mentioned in the psychiatric literature, there is general awareness that fatherhood brings out the strengths and weaknesses in a man. This fact has practical consequences which perhaps are not sufficiently recognized. Because of its definite structure and demands, the military environment provides an unusual opportunity to observe the emotional reactions of young men as they begin to look on themselves as fathers.

My attention was called to the special features in the problems of expectant fathers not only by the dramatic nature of some of their clinical problems but also by their responses on a projective psychological test which was routinely used as a part of psychiatric evaluation. Faterson¹ had mentioned, several years before, that patients often gave valuable responses when asked to draw and then to describe an animal. I used a modification of that technique as follows. Patients were asked to draw an imaginary animal, then, to write a story in which the animal was "doing something." They were encouraged to take a hint from a motion picture or their reading if nothing immediately came to mind. On interpreting those drawings and stories it was found that expectant fathers, as compared with other men, showed a preponderance of fantasies relating to pregnancy and birth, sibling rivalry, and parental attitude. Levy² discussed the interrelations between drawings, stories, daydreams, dreams, and their relationship to other clinical findings.

DEFINITION OF TERMS AND METHOD OF STUDY

The criterion for inclusion of a case in this study was that, for a time, the man had believed he was an expectant father. It was certain that a pregnancy had existed in 51 instances, and some reason to believe so in the remaining four cases. The baby had

From U. S. Air Force Hospital, Wright Air Force Base, New York. Dr. Curtis is now Instructor in the Department of Psychiatry, State University of New York College of Medicine, New York City.

been conceived in wedlock in 45 instances and out of wedlock in 10. Of the 55 men 31 were expectant fathers for the first time 10 for the second time nine for the third and five for the fourth (or more) time. All but six men were maintaining a residence in the nearby area with their families. The study was conducted therefore in an essentially peacetime military setting.

The 55 men were divided into three separate groups which represented varying levels of success in the handling of their problems as expectant fathers. From routine clinical experience with 204 servicemen during a 21 month period 31 had been expectant fathers when their presenting problems began. Those 17 men whose problems were considered serious will be designated group A. Group B was composed of the other 14 men whose problems were minor.

Group C was a normal control group of 24 expectant fathers none of them had sought or been referred for psychiatric consultation while they were expectant fathers. The 24 men were part of a larger group of 240 enlisted men random samples of men from two squadrons who took part in a psychiatric screening study which had been presented to them as a study of the past and present difficulties encountered by normal enlisted men. Several brief projective tests were administered to them and they were asked to fill out a four page personality inventory form. One of the items on that form was whether or not at that time the woman concerned was pregnant. Three months later having established the expected date of birth of the baby a review was made of all visits the 24 men had made to sick call while they were expectant fathers and an informal efficiency report was obtained on their duty performance during those months. While the men in group C were not interviewed except for a few on whom necessary factual data were lacking data roughly comparable with groups A and B was obtained from them with a minimum of interference with their spontaneous behavior.

VARIATIONS IN PERSONALITY FUNCTIONING FOR THE GROUPS

The three groups were roughly alike in chronologic age (for each group the median age was within one year of 24 years). The groups were also similar in ethnic background (46 were white there were four Negroes in group A two in group B three in group C). All were enlisted men except two commissioned officers in group B.

Differences in personality structure probably accounted for most of the differences in types of clinical problems these men experienced as expectant fathers. Of the 17 men in group A nine had a life history characterized by impulsive behavior disorder and

another five had definite schizoid personality tendencies. Of the 14 men in group B, none had a history of impulsive behavior disorder but five were schizoid. Of the 24 men in group C, three had chronic impulsive behavior disorders and one was schizoid. These personality evaluations were made on the total data on an individual case.

Indications of a lack of emotional readiness for fatherhood were clearly apparent from a few gross facts concerning the man's military and marital situation at the time he became an expectant father. The manner in which the men in the three groups set the stage for their approaching parenthood, including their timing of that event, and their conscious desire to become fathers, was probably the most crucial aspect of their subsequent emotional adaptation.

Thus, as for unfavorable military situation, group A had a significantly greater number of men in the four lowest enlisted ranks (15 as compared with four in group B and 11 in group C $P = .02$ or less). Also, group A had a significantly greater number of men with previous records of misconduct (14 as compared with one in group B and two in group C $P = .02$ or less again when group A is compared with either of the other two groups). From the foregoing figures it was apparent that both groups B and C enjoyed a favorable military situation. There was an interesting manner, however, in which group C differed from group B or group A. Counting only those men in all of the groups who were serving in their first four year tour of duty, group C had a greater number of men who were to become fathers within six months of the date on which they were to become eligible for discharge to civilian life (10 of 11 men) as compared with group B (none of three) or group A (one of 11—compared with either group $P = .02$ or less). Thus, group C contained a significant number of men who had allowed themselves more freedom for making future life plans, who had access to more pleasant fantasies and hopes in the immediate future, and who were bolstered up by the humorous comments of their fellow servicemen.

Difficulties or disorganization, in marital setting followed along similar lines. Unmarried fatherhood expectancy was more frequent in group A (seven as compared with none in group B and three in group C, this difference is significant by comparison with group B $P = .02$, but is not significant on comparison with group C $P = .10$). Two men in group A and two in group C were married before the expected date of birth. The expectation of an illegitimate offspring posed an especially more complicated and disturbing event, and was neither consciously defended nor en-

Chi-square test for significant difference concerning for small sample size difference at a significant if $P = .05$ or less.

joyed by these men. Altogether 15 of the 17 men in group A were rejecting in attitude toward the expected baby usually openly stated. Of the 14 men in group B 11 were rejecting in attitude but they were ambivalent and indirect rather than open in their statements. Data for group C were inadequate for this comparison. In general the attitude toward the expected baby was closely related to attitude toward the expectant mother. As a further reflection of their marital setting it was noted that four of the wives of men in group A sought psychiatric consultation, one wife of a man in group B, and in no instance did a wife of a man in group C seek psychiatric consultation as an expectant mother. This also illustrated the fact that the problems encountered by these men were not mere passive reflections of problems encountered by their pregnant wives.

CLINICAL PROBLEMS

The men in group A suffered from problems which were *serious* within the military environment—acute exacerbations of impulsive behavior disorders were most common. Less often they showed severe neurotic or borderline psychotic symptoms or psychosomatic disorders. The men in group B suffered from problems which were *minor* in the military setting—transient or mild psychosomatic or neurotic symptoms which were often found in association with a subtle but well controlled change in behavior. While none of the men in group C came for psychiatric consultation, nine of the 24 had made several visits to sick call and the report of their effectiveness at duty revealed that their problems were similar in type and severity to those of the men in group B. Another eight had the same type of complaints but of less severity requiring fewer visits to sick call; only seven had no significant clinical finding by these methods of study.

A discernible trend in the clinical course of these problems in all groups was that the men seemed to experience their greatest difficulty during the first and the last few months of their wives' pregnancies. A man's problems also were more intense and persisted even after the baby was born in those instances where he had the greatest personality instability and external situational pressures.

The more important clinical findings on all men in the three groups are summarized in table 1. It will be noted that anxiety and depressive reactions were common. Two men in group A who were moderately depressed attempted suicide in one instance this followed the birth of an unwanted child and in the other after a suspected criminal abortion. In both instances agitated and psychopathic like behavior of several weeks' duration preceded the attempted suicide and probably masked the severity of

depression. Both of these men required psychiatric hospitalization, but made a gradual recovery and were returned to duty after a few weeks. In other instances, a mild depressive reaction was associated with accident proneness: minor sprains, contusions or lacerations from automobile or other accidents.

TABLE 1 *Clinical findings in 55 expectant fathers*

	Group A (17 men)	Group B (14 men)	Group C (24 men)
Symptoms			
Anxiety irritability	15	9	11
Depression	8	9	4
Attempted suicide	2		
Accident proneness	2	2	3
Gastrointestinal tract symptoms	5	8	9
Headache dizziness	4	7	3
Hypochondriasis	2	4	1
Passive defiance			
Lower efficiency	16	7	2
Heavy drinking	8	1	2
Transfer requests	6	8	4
Overt defiance			
AWOL	6		
Other offenses	3		
Insubordination	6		

The frequent occurrence of psychosomatic symptoms in all three groups was the most important distinguishing feature in the psychiatric reactions of these men. The men in groups B and C, much more clearly than in group A, developed complaints which were very similar to the complaints of pregnant women. Several men developed gastrointestinal symptoms which were typical of "morning sickness" as soon as their wives became pregnant, less commonly a sudden increase in appetite similar to "eating for two" was seen. Anorexia, nausea, and epigastric distress suggestive of peptic ulcer were common. One man, in group C, had roentgenographic evidence of ulcer. Alternating constipation and diarrhea, headache, dizziness, or other body pains were other common findings. Hypochondriacal complaints with fears of brain tumor or abdominal cancer, developed in several men who were well controlled paranoid personalities but, paranoid attitudes were poorly controlled in two such men in group A.

Repeated visits to sick call were made by three men in group A, eight in group B, and six in group C. Three in group B were

hospitalized for diagnostic studies to rule out organic disease. The most serious psychosomatic disorder was suffered by a man in group A who developed severe non specific ulcerative colitis immediately after a forced marriage. After many months of conservative medical treatment and subjective improvement, objective signs of severe and chronic bowel changes remained and he was the only airman in the study medically discharged from service.

The overo passive aggressive or overt defiance which was so frequent in group A as noted in table 1 had the following consequences: five were disciplined at least once, three were court-martialed, eight were separated from military service through administrative actions.

The more subtle passive defiance and its practical consequences even in groups B and C was not immediately apparent. However many men in group B had made sudden well rationalized official requests for transfer (six instances) or hardship discharge (two instances later withdrawn). Altogether six of the 14 men in group B had a change in station assignment at some time during their wives' pregnancies although they were already maintaining residence with their wives. This suggested that expectant fathers are more on the move than other servicemen. Fewer requests were made by the men in group C where it will be recalled many of those men were near the end of their tour of duty.

For all three groups a greater restlessness was also shown in their home life. Marital tension increased because many men left home more often during evenings, began to drink more, developed new athletic interests or were believed to be having extra marital affairs. Thus the same tendency to be on the move which was expressed by impulsive behavior in group A may have been expressed in a more controlled form by the men in groups B and C.

PSYCHODYNAMICS

From the time a man believes that he may be an expectant father and notices changes in the expectant mother and in the fetus within her, many conscious and unconscious problems are stirred up and must be handled at an accelerated pace. It was therefore notable that the men themselves were seldom aware that their recent problems had any relation to their approaching parenthood. Referring physicians showed little awareness that a patient was an expectant father. This is partly explained by the fact that in our culture there is a general silence concerning expectant fatherhood. This is in marked contrast to many primitive societies where the behavior of the expectant father is strictly ritualized.

Some of the psychodynamic problems which expectant fathers face will be illustrated by several brief summaries of the clinical findings, and the drawings and stories about an imaginary animal as actually written by the men studied. My interpretive comments were based on the more complete clinical data for a given case. Group C will be considered first because the issues became more complex in groups B and A.

PROBLEMS OF GROUP C

More often than in other groups the central figure in the story of men in group C was capable and strong; the plot was involved and was elaborated with cleverness and humor. Even though there were frequent expressions of anger and of ambivalent attitudes, their stories often ended on a happy or confident note. Several of the men who had no significant clinical problem wrote very little and their stories revealed rigid emotional control; others wrote stories with a moral or in the style of children's tales.

Illustration 1 This man was an expectant father for the first time and had no significant problems. This story was obtained in the eighth month. The poor farmer was losing his farm because he couldn't pay his taxes and mortgage on the farm, so as a last resort he decided to blow up his chicken coop and barns, burn them down and collect the insurance. After he blew up the chicken house he had a change of heart and tried to put the chicken he had destroyed back together when he started collecting the pieces all he could find was ten legs, a breast and a head, so he put them together and made his fortune selling his chickens to families with 10 children.

This story can be interpreted as revealing this man's fantasies and conscious thoughts concerning the financial responsibilities and worries and mixed emotions a father will experience. Will he resort to arson or violence or will he be called upon to do the impossible? If so, will he succeed? At a deeper level this man may have been expressing unconscious fantasies on how babies are made, how they are born, how dangerous it is, and how it is possible that the child may be deformed. His ambivalent attitudes are expressed by an unconscious anxiety that he will be impoverished after the new baby arrives while at the same time he considers the possibility that he may become wealthy. He is concerned and confused as to whether he should injure the baby or take good care of it, and whether he should starve or feed the baby. Inasmuch as his wife was in her eighth month when sexual intercourse is forbidden, some of the feeling of tension and anger at this deprivation may be related to increasing sexual tension and rebellious temptations.

Illustration 2 This man was also an expectant father for the first time. For the first three months he displayed anxiety, sprained his left shoulder, suffered from anorexia except for the evening meal, and desired to be transferred. This fantasy was obtained when his wife had

missed her first menstrual period and he was uncertain of the pregnancy. He drew a square picture frame but did not draw an animal. He wrote as follows: "Picture of an invisible melzocestafogahba. As you can undoubtedly see, he is in swift pursuit of a mate. You will also notice that the mate to be is also invisible; this is a very common characteristic of the melzocestafogahba family. Scientists at the present time admit they don't know very much about this animal (? fits an animal) but at last reports, Dr. Nelson Cuttspuller, a noted authority on Wine, Women and melzocestafogahbas reports that after a few more drinks, he will give us the complete lowdown."

His story could be interpreted on several levels: a) containing references to the missed menstrual period, the sperm meeting the ovum, his anxiety while awaiting the obstetrician's report. He is ambivalent as to whether he wants a baby, is uncertain as to whether there is a baby at all, and whether there is only one or even twins. There is also concern as to which family characteristics the baby will inherit. He projects his own self-image onto the baby and concludes that the baby will have desirable traits such as physical vigor and a strong heterosexual inclination. There is hostility toward an authority figure, but he is able to identify with the authority figure as shown by the pompous writing style. He was making a satisfactory emotional adaptation with the help of defense mechanism of somatization, denial, and humor.

Other men in this group, whose difficulties were similar to men in group B, wrote stories more closely resembling the men in group B.

PROBLEMS OF GROUP B

Themes of masculine strength and bravery were rarely obtained from these men. There was little action or little elaboration of plot. Endings were avoided or were unhappy. The central figure of the story was often a fish or bird, but there were many references to water, classical, symbolic references to pregnancy and birth, and the stork. Often the central figure was weak, hungry, homeless, or unwanted. These men were projecting their own feelings of need and their own inhibited fear and anger onto the fetus. Their clinical symptoms revealed most clearly that they were struggling with fantasies that they themselves were pregnant, or that they themselves were the baby.

Illustration 3. This very capable plot was an expectant father for the first time. During the first six months of his wife's pregnancy, he became anxious, irritable, and depressed. He gained 50 pounds because of an uncontrollable appetite and was ashamed of his physical appearance. He was temporarily suspended from flying duty because of his excessive weight which had been a problem for several years. He developed symptoms suggestive of peptic ulcer which required hospitalization, but roentgenographic studies did not reveal an ulcer. After several months of psychotherapy and a reduction diet, he lost the excessive weight, other

symptoms cleared and shortly after the baby's birth, he was returned to flying status

This fantasy story was obtained in the sixth month. This thing—there was no name for it to be sure—it all started early one morning while my friend and I were fishing. The lake was partly covered with a gray mist and a dead calm the water quite calm. There was a bite on my line and of course I thought it was one of the well known fish in this lake just begging to be pulled aboard. Believe it or not this picture that I drew for you the thing I pulled in—Haven't decided what to do with it. This is a symbolic version of the sexual intercourse the conception and the man's uncertainty as to whether he should keep the baby or throw it back—before the baby was actually born. His symptoms revealed his confusion as to whether he or his wife was pregnant and anxiety that he might be starved by the arrival of the new baby. He was protecting himself from the frightening aspects of those specific fantasies.

Illustration 4 This man, an expectant father for the second time, complained of headache, fear of brain tumor, and an itching sensation in his urethra. He made repeated visits to sick call for consultations. He requested and obtained a transfer to another air base for a temporary duty assignment at about the time the baby was expected to be born.

This fantasy was obtained in the ninth month. There was a little fish named Oscar who had legs. When ever he saw other fish about to be caught on a hook he would either run or swim very fast to warn them. All the other little fish were jealous of him. One day he wanted to explore so he swam up to the shore and walked right out on the bank and a cat caught the poor little fish and that was the last ever heard of little Oscar the walking fish. The projection of some of his fear as well as some of his own admirable qualities onto the baby is clear. He identifies with the baby and shares the baby's supposed fears of being engulfed and injured and eaten up. His identification with his pregnant wife was best shown by his symptoms. On a more superficial level of interpretation he was under increased tension on account of sexual frustration. This man was able to verbalize his fears of the consequences of sexual abstinence and was troubled by sexual dreams and nocturnal emissions.

PROBLEMS OF GROUP A

The overtly defiant behavior of many men in this group may have represented an unconscious attempt to convince themselves of their masculine strength and bravery. Their fantasy stories, however, usually showed an unconscious feeling of weakness or "birdness" and these were the feelings which were projected onto the expected baby. Often their fantasy output was meager; but, more often than in the other groups, their unconscious problems were directly expressed by their impulsive behavior. Intense prob-

lems of unconscious sibling rivalry were observed similar to those found in very young children

One man in the third month of his wife's pregnancy became enuretic for several weeks and extremely insubordinate after his application for discharge because of hardship was not approved. Another man toward the end of his wife's pregnancy developed expensive interests in new hobbies which left no money for necessary household expenses. He bought model planes, trains, started a coin collection, and purchased a violin and began to take lessons. Not only did these actions indicate his sibling rivalry but on a deeper unconscious level they may have represented a desire to influence the baby in a favorable way by engaging in cultural pursuits and a desire to provide playthings. Their ambivalence was more extreme as were their actions.

Illustration 5 This man, an expectant father for the first time, was preoccupied with voyeurism. He complained of recent sexual preoccupation and masturbatory habits. He drew a picture of a cow and claimed inability to write a story. He agreed to dictate one as follows: "With a pig for somebody to milk her. There is one thing missing—the baby cow. The cow is being milked, represented his own feeling of sexual tension and the absent calf represented his direct competition with the expected baby for the breast. On a deeper level, however, this man may have had fantasies of nursing the child or of having too much milk."

Illustration 6 This unmarried expectant father was a neonatal nurse officer with six years of excellent military service. He suddenly began to bottle withdraw from his friends, telling them that his girl had leukemia and he was helping to make her last few days of life enjoyable. Later he admitted several attempts to commit burglary which he could not bring himself to complete. He was anxious, depressed, and irritable. Following an argument with the girl friend, he attempted to commit suicide by running his car into a wall, leaving the motor running in a closed garage. The pregnancy was probably terminated by abortion.

This fantasy was obtained a few days following his attempted suicide.

I hid behind a rock and fired a shot into the cave but nothing happened. I was getting ready to shoot again when this animal came out. I was so shocked that I could not move. Suddenly the animal trotted straight at me. I pulled the trigger but nothing happened. I picked up my gun. It worked. I have been in the same area many times since then but have never seen the animal again. The intense ambivalence and the difficult hostility directed toward the girl, the baby, and himself and the preoccupation with the military and civilian environment were evident in this instance and in the other attempted suicide. There was a similar pattern of events following an argument and impending separation. Both men tried to commit suicide by gas. This suggested not only a conclusion that they would be completely abandoned and left to

die after the new baby arrived but also that they may have felt that they were helplessly immobilized and suffocated within the maternal body

Illustration 7 This expectant father was told by his girl friend that she was pregnant and that a physician had verified it. They were married a few weeks later. The first symptoms of ulcerative colitis were experienced a few days before the marriage. The couple separated a few weeks later when the man discovered the woman was not pregnant. The ulcerative colitis increased in severity. He was hospitalized and treated conservatively with gradual subjective improvement over a 10-month period. Lengthy expensive and bitter lawsuits were begun by his family and his wife's family. Although both parties said that they wanted a divorce they obstructed the efforts of their lawyers by continuing to write and telephone each other at times expressing love and at other times hate.

This fantasy story was written by him six months after he learned his wife was not pregnant. This animal was born on another planet. He got to earth by accident. The only thing to eat on the planet was rock and he needed those big teeth to chop this up. The growth under the head was a pouch to store some of this strange food. He never turns around and walks back but constantly moves in one direction. The pregnancy fantasies still persisted. As shown by his symptoms and his story he was still angry and protective of a fantasied fetus within his own body and was projecting onto it his own physical damage and deprivation.

DISCUSSION

Among the few available reports in the literature are Benedek's⁴ discussion of the psychodynamics of fatherhood which is particularly focused on the problems of men in military service and men who are about to become veterans. Roider's⁵ discussion of the unmarried father is also valuable. Both writers stressed the fact that fatherhood brings out the individual's oedipal situation very clearly. Benedek's viewpoint may be paraphrased that as a man attempts to develop an unconscious image of himself as a good father he is aided by his past and present life experiences with "good father mother and sibling figures. It can be seen that the effects of those inner unconscious images are apparent in various life situations but they become especially evident as soon as a man becomes an expectant father.

These observations indicated that more of the men in group C possessed or achieved a rather stable and complete inner image of themselves as capable and loving fathers. While they often showed indications of concurrent identifications with the pregnant wife and with the expected baby, those identifications were either transient or did not lead to symptoms which could not be handled at sick call. Indeed it would seem that normally the expectant

father identifies with his wife and baby. This may actually help him to become more responsive to their needs for love and care.

The men in group B had less stable and complete images of themselves as capable fathers. When, as was the usual case, they made a quick response to brief psychotherapy, they continued to show evidence of an unconscious image of themselves as a "good mother" or as a "good older child" in the family. They felt uncomfortable in the role of a good father. The men in group A had no stable or complete or good images of themselves as fathers, mothers, siblings, or babies. These interpretations in all three groups were consistent with their total life histories and not merely with their response to the pressures of parenthood.

Frank discussed the issues underlying other aspects of these observations in his article on the sexual fantasies of young children. He noted a series of intermingled fantasies which children resolve sometimes hopefully and at other times in a manner which frightens them. What would it be like to have to produce a baby within one's own body? What would it be like to be the developing fetus? What would it be like to be replaced by the newcomer? How and under what conditions do these things happen? In attempts to find an answer, the child may draw on familiar experiences such as eating, urinating, and defecating. This study showed many manifestations of those specific fantasies expressed by symptoms, behavior, or in the drawings and stories. The extent to which these unconscious fantasies from childhood were revived, the degree of regressiveness, and their persistence were determined by the emotional integration of the individual and the extent to which he was experiencing external pressures.

There is a need for further psychiatric research to determine the impact of these problems on the man and on the military environment. It would be important to establish the frequency of self-inflicted or accidental injury among expectant fathers who handle aircraft, motor vehicles, or heavy machinery. It would be of value to know how frequently these men request transfer or discharge, or show a sudden reduction in efficiency, or lose control of their behavior.

Medical officers, sick call, flight surgeons, and all other physicians should be alerted to the importance of inquiring whether or not a male patient is an expectant father. It will often develop that problems such as a sudden anxiety, irritability, or depressive reaction, or certain psychosomatic symptoms are related to fatherhood expectancy. The man's attention can then be focused on the real problem inasmuch as he will not be effectively reassured even though he is successful in obtaining a transfer or reassignment, or by being allowed to act out in other ways. If the man feels free to do so, he will ask the physician for frank and

factual information concerning the effects of sexual abstinence, masturbation, the development of the fetus, the effects of pregnancy on the wife, prenatal and postnatal care of the wife and baby, realistic problems concerning finances and housing, and changes in sleeping arrangements and recreational activities. Realistic discussions will permit the patient to speak more intelligently with his wife, and share more knowingly and effectively in their experience. He may also exchange information with friends who have successfully solved these problems. Even the skilled psychiatrist will avoid the interpretation of deep unconscious fantasies during brief psychotherapy, and will interpret the indications of latent heterosexuality rather than latent homosexuality, and latent maturity rather than latent infantility. Only the more difficult cases will require psychiatric referral because a physician needs no psychiatric training to discuss these very human problems and anticipations which surround the expectation of a new baby.

SUMMARY

A study of 55 expectant fathers in three groups revealed that parenthood expectancy is frequently overlooked as a source of acute emotional stress.

Group A, made up of 17 men most of whom had a previous life history of impulsive behavior or schizoid personality, presented psychiatric problems which were serious within the military setting. Seven men were expecting to become fathers of illegitimate offspring. Fifteen were openly rejecting in attitude toward the expected baby. Their outstanding clinical problems were depressive reactions with attempted suicide (two instances), ulcerative colitis (one instance), and severe passive aggressive or overtly defiant behavior leading to administrative separation from service (eight instances).

The 14 men in group B, well controlled in behavior and adjusted to military life presented minor problems. Eleven were ambivalent or openly rejecting in attitude toward the expected baby and toward their wives. Their clinical problems consisted of transient or mild psychoneurotic or psychosomatic disorders which responded to brief and realistically oriented psychotherapy. About half of these men had shown a slight reduction in duty efficiency or had made recent requests for transfer.

Group C was made up of 24 men who had not been referred for psychiatric consultation while they were expectant fathers. They were studied by means of group psychological tests, a review of visits they had made to sick call, and an informal efficiency report for the months they were expectant fathers. About one third were found to have no significant clinical problems; another third

study eventually are proved to have the suspected pathologic condition Mason however compiled an excellent series of results of 400 263 examinations with 35 mm film at the U S Naval Training Station Great Lakes III Ordinarily long term follow up of suspected cases is difficult because often months of hospitalization and clinical laboratory and histologic study are required before a definite diagnosis is obtained

Therefore an exhaustive follow up study of those personnel discovered to have suspicious findings on their photofluorograms during a four month period was undertaken in order to assess the contribution of mass photofluorographic surveys to the total number of cases of tuberculosis diagnosed among naval and Marine Corps military personnel by all methods It was anticipated that a statistically significant percentage of proved cases of tuberculosis could be obtained in order to predict the total yearly yield of the mass chest x ray program In addition the clinically important nontuberculous conditions incidentally discovered could also be classified and evaluated

All photofluorograms taken by naval photofluorographic units were received and reviewed at the Bureau of Medicine and Surgery From 1 June 1953 through 30 September 1953 348 815 photofluorograms of naval and Marine Corps personnel were received and reviewed Of these the photofluorograms of 8 851 persons were considered to show suspicious findings and these persons were re examined by 14 by 17 inch film Re-examinations of 773 of these confirmed the suspicious photofluorographic findings and these persons were referred for further clinical study

At the end of the calendar year 1953 an attempt was made to determine the final established diagnoses of these 773 persons however only 659 of the 773 referred persons could be identified for follow up For thoroughness the hospital reports received in the Bureau were searched on three separate occasions as recently as April 1954 in order to recover the most recent available information In all instances a diagnosis had been established and the patient invalided from service retained for treatment, or returned to duty

Of the 659 patients identified (table 1) 284 (43 1 percent) were apparently not admitted to a hospital and 86 (13 1 percent) were admitted but had unrelated pathologic conditions This left 289 (43 9 percent) persons with 293 established diagnoses compatible with the original suspicious findings on photofluorographic examination Thus 0 08 percent of the 348 875 photofluorographic examinations revealed proved pathologic conditions of the chest.

Of these 289 persons 78 (27 0 percent) were tuberculous of these 63 had active pulmonary tuberculosis Thus persons with

TABLE 1 Breakdown of photofluorographic findings in all persons examined (expressed in percent)

Gr p number	Number and type of findings	Percent of group 1	Percent of group 2	Percent of group 3	Percent of group 4	Percent of group 5	Percent of group 6
1	348 873 pers (examined by photofluorogram)	100 00					
2	8 851 persons (examined by 14 by 17 inch roentgenogram)	2 54	100 00				
3	773 persons (refined further study)	0 22	8 73	100 00			
4	639 persons (followed)	0 19	7 45	85 25	100 00		
5	289 persons (with 293 photo pathologic chest condition)	0 08	3 27	37 39	43 85	100 00	
6	78 pers (with confirmed primary tuberculosis)	0 022	0 88	10 09	11 84	26 99	100 00
7	63 persons (with confirmed active tuberculosis)	0 018	0 71	8 15	9 56	21 80	80 77
8	71 pathologic conditions (que ti nably tuberculous)	0 020	0 80	9 18	10 77	24 57	
9	144 pathologic condition (nontuberculous)	0 04	1 63	18 63	21 85	49 83	

active tuberculosis represented 9.6 percent of the 659 patients who had been referred for further clinical study (or 0.71 percent of the 8,851 showing suspicious photofluorographic findings or 0.18 percent of the total number of persons examined)

TABLE 2. Characteristics of primary tuberculosis diagnosed in 1953

Type of primary tuberculosis	Number
Primary	4
Disseminated	2
Miliary	140
Modest	192
Focal	67
Total	405

Source: Medical Statistics, Department of the Surgeon General, 1953.

Accordingly, we may estimate that every 5,538 photofluorographic examinations will reveal one case of active pulmonary tuberculosis as based on these observations. Applying this ratio to the total number of naval and Marine Corps personnel examined during the calendar year 1953, i.e., 1,457,373, it could be expected that about 263 cases of active pulmonary tuberculosis would be discovered by routine photofluorographic examinations. Because 405 persons were diagnosed in 1953 as having active pulmonary tuberculosis (table 2), the photofluorographic program was probably responsible for at least 65 percent of the finds.

Besides the 78 persons actually diagnosed as being tuberculous, another 71 had questionably tuberculous lesions such as pulmonary infiltrations, pulmonary fibroses, and pulmonary granulomas (table 3). In fact, 15 had conditions so controversial that they were invalidated from the service.

The 144 established diagnoses in the remaining persons were not of tuberculous lesions and ranged from pneumonias to neoplasms and cardiovascular defects to musculoskeletal deformities (table 3).

It is apparent that the diagnostic potentialities of photofluorography are not limited to the detection of tuberculosis. Aside from the acute nonspecific inflammatory diseases in which admittedly routine screening contributes little to the diagnosis or prognosis, heart disease, congenital and acquired, and neoplasms lend themselves well to miniature film detection.

TABLE 3 293 pathological conditions diagnosed in 29 persons following

I TUBERCULOSIS (78)			
Active		Arrested	
Minimal pulmonary	31	Minimal pulmonary	12
Moderately advanced pulmonary	24	Moderately advanced pulmonary	2
Far advanced pulmonary	7	Tracheobronchial lymph nodes	1
Pulmonary postoperative			15
Unilateral resection	1		
	63		
II. QUESTIONABLY TUBERCULOUS (71)			
Infiltration, pulmonary cause undetermined	49	Calcification, pulmonary cause undetermined	10
Fibrosis, pulmonary cause undetermined	10	Granuloma lung type unknown (both sections)	2
			71
III. NONTUBERCULOUS CONDITIONS (144)			
Pulmonary		Mediastinal	
Cysticoid mycosis	3	Enlargement of diaphragm	1
Histoplasmosis	2	Enlargement of congenital diaphragmatic defect	1
Sarcoidosis	13	Arthritis, rheumatoid	1
Carcinoma of bronchus	1	Osteomyelitis, chronic fibrous	1
Teratoma, malignant, metastatic from testis	1	Fracture of clavicle with union	1
Cyst, pulmonary	4	Scleritis, congenital	1
Asthma, perennial	4	Dilatation of fibrous probably	1
Bronchitis, chronic	7	Chondroma	1
Pneumonia, bacterial	1	Spina bifida	3
Pneumonia, primary, typical	24	Hemivertebra	1
Bronchopneumonia	3	Pectus excavatum congenital	1
Pneumonia, necrotic	5	Defect	1
Bronchitis, chronic	5	Compressed fracture of vertebra	2
Pleural adhesion, pneumonia	1		14
Fibrosis, pleural	1	Cardiovascular	
Pleurisy, chronic, tuberculous	3	Pericardial cyst	2
Pneumothorax, spontaneous	4	Tumor, pericardial	1
Bronchiectasis	14	Rheumatic valvulitis (inactive)	1
Atelectasis	1	Dilatation of aorta with aneurysm	1
Emphysema, bullous	1	Fibrosclerosis	1
Cystic disease, congenital	1	Hypertensive vascular disease, benign	2
Pneumothorax, traumatic	1	Hypertensive vascular disease	1
	100		
Respiratory		Miscellaneous	
Fungal disease	3	Aneurysm, aorta	1
Leukemia, lymphocytic	1	Splenic defect, ventricular	1
Lymphadenopathy	5	Heart disease, congenital, non-coronary	2
Lymphadenitis, chronic, mediastinal	2	Coarctation, aorta	1
Carcinoma of mediastinal lymph node	1		13
Lymphadenopathy, generalized	1	Miscellaneous	
	13	Ganglioma, mediastinal	1
		Thymoma	1
		Lipoma, intercostal	1
		Mediastinal masses	1
			4

Not elsewhere listed

Other investigators have substantiated this conclusion. For example, Schwartz and Borman⁶ showed that successive photofluorograms of 10,549 persons revealed abnormal cardiac silhouettes in 207 and that about 80 percent of these 207 were proved to have definite organic heart disease. Gowen and Frank⁷ found 74 cases of cardiac disease among 43,202 persons, and 14 proved cases of chest malignancy among 156,724 persons examined by

70 mm film According to Ochsner and associates who said that roentgenography yielded suggestive evidence of lung cancer in 82 percent of their patients routine screening offers the only method for early detection of pulmonary neoplasms

That the general civilian population should yield higher rates of neoplastic and cardiac diseases than does a group of young male adults is to be expected However in spite of the fact that our study deals largely with the latter group a significant number of nontuberculous conditions were detected in apparently asymptomatic persons at a time when corrective measures might be successfully instituted The economic importance of these non tuberculous conditions would be impossible to determine accurately and must be left to the imagination Although lacking the contagiousness of tuberculosis neoplastic and cardiac diseases can be as debilitating and financially disabling as the former Thus the worth of the mass photofluorographic chest screening program should be evaluated in terms of the methods success in detecting not only tuberculosis but the economically important nontuberculous conditions as well

SUMMARY

During a four month period 348 875 U S Navy and Marine Corps personnel on active duty and retired status were examined by photofluorographic films Of these 8 851 were re-examined using 14- by 17 inch roentgenograms because of suspicious photofluorographic findings Of these 773 were referred for further study Ultimately 289 were proved to have significant chest conditions

Sixty three cases of active pulmonary tuberculosis were discovered by routine photofluorogram an incidence of 18 per 100 000 examinations This method is estimated to have accounted for about 65 percent of all diagnoses of active pulmonary tuberculosis in the U S Navy during 1953 Mass screening also contributes to the detection of nontuberculous conditions particularly neoplastic and heart diseases

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THE CERVICAL SMEAR FOR CARCINOMA

I believe that smears obtained directly from the cervix are superior to those prepared from the pool of secretion in the posterior vaginal fornix at least in detecting carcinoma of the cervix. This presupposes a speculum examination of the cervix which should be a part of every pelvic examination anyway. The mucous plug sometimes present in the endocervical canal is usually poor hunting ground and should be discarded. The smear can be made by aspirating the endocervical secretion with a blunt pipet or preferably by gently scraping the squamous columnar junction with a wooden or metal spatula or with an Ayre wooden scraper. The material is then smeared out over one entire side of a microslide and dropped while still wet in a fixing solution consisting of equal parts of ordinary anesthetic ether and 95 percent ethyl alcohol. The smear should be rather thick and should be spread out as uniformly as possible.

It is convenient to have available in the examining room at all times screw top koplin jars containing the ether alcohol fixative and microslides properly numbered with a diamond point pencil. (These jars will hold five slides or 10 if they are placed back to back.) Just before making the smear the nurse or assistant removes a slide from the fixative, wipes it dry and drops it back into the fixative immediately after the smear is made. In my experience the fixative can be used almost indefinitely but it must be filtered from time to time.

Fixation should be carried out for at least two hours and the smears can remain in the fixative for long periods without deterioration of the cells. After proper fixation the smears are removed, stained and examined. If necessary they can be removed from the fixative, dried and mailed to the cytologic laboratory with no cell deterioration to speak of. Pertinent clinical information particularly the name and age of the patient and clinical appearance of the cervix should be submitted with the specimen.

—I L TILDEN

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THE DIFFERENTIAL DIAGNOSIS OF PAPILLEDEMA

Its Importance in Military Medicine

SAMUEL D M PHERSON J *Leutenant Commandant (MC) USNR*
STEPHEN J RYAN *Capt (MC) USN*

THE CORRECT recognition of papilledema or choked disk when it occurs in military personnel is important not only for the early recognition and treatment of the underlying cause but also for obviating the needless return of personnel from distant stations to continental medical centers with disorders which may simulate papilledema but may be of little or no neurologic significance. If the diagnosis of early papilledema is as difficult for the trained ophthalmologist as has been suggested by the extensive literature on the subject one can easily understand the difficulties encountered by the general medical officer at distant stations with no special equipment for evaluating blurred disks.

Shortly after von Helmholtz' invention of the ophthalmoscope in 1851 papilledema was first described by von Graefe and subsequently recognized as the cardinal sign of increased intracranial pressure. Since that time it has been accepted as perhaps the most important single diagnostic sign of brain tumor. For this reason if for no other the presence of blurred disks has frequently resulted in the hospitalization of personnel with consequent loss of service although no pathologic disorder of the eye or central nervous system was present.

CLINICAL APPEARANCE

The appearance of the disk with papilledema will vary with the degree and duration of edema. As a rule the disorder is bilateral although in its incipency the process may involve one eye more noticeably than the other. The earliest signs of papilledema are thought to be swelling of the nerve fiber layer of the disk particularly at the superior and nasal sides of the disk and slight forward protrusion of the central vessels at their point of entry into the nerve head. Walsh believed that venous distention and tortuosity immediately around the disk

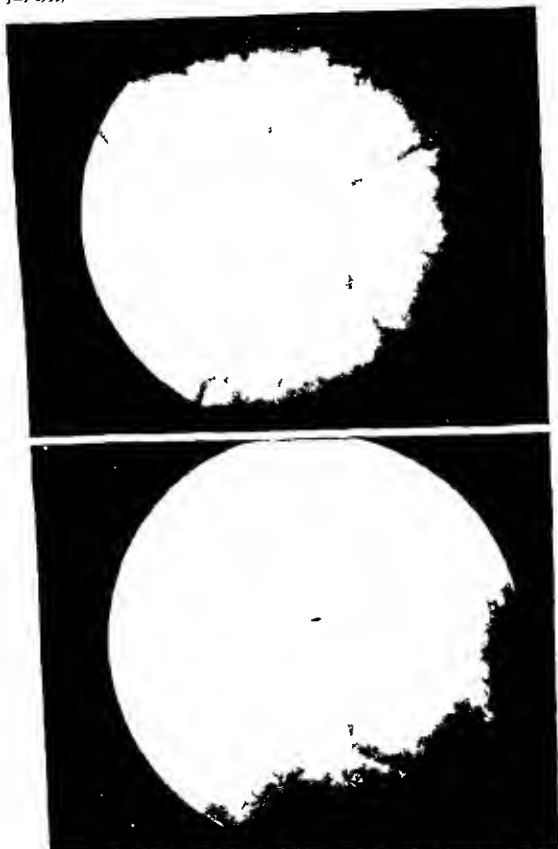


Figure 1 Appearance of the fundi in a patient with papilledema and frontal lobe tumor showing obliteration of the physiologic cups blurring of the disk outlines and hemorrhage over the right disk at 7 o'clock.

DIFFERENTIAL DIAGNOSIS

Papilledema must be distinguished from several disorders of the optic nerve which at times may simulate the appearance of choked disk. These are pseudopapilledema, optic neuritis, drusen of the optic nerve, juxtapapillary choroiditis, and medullated nerve fibers (table 1).

TABLE 1 *Distinguishes features of various blurred disks*

Disorder	Vision	Field	Involvement	Neurologic signs
Papilledema	Good until late	Enlarged blind spots	Bilateral	Usually present
Pseudopapilledema	Good	Normal	Bilateral	None
Optic neuritis	Poor	Central scotoma	Usually unilateral	Myelitis present
Drusen	Good until late	Normal defects	Bilateral	None
Juxtapapillary choroiditis	Usually good but may be affected	Scotomata	Unilateral	None
Medullated nerve fibers	Good	Blind spot enlargement	Usually bilateral	None

PSEUDOPAPILLEDEMA

Pseudopapilledema is a congenital disorder usually occurring bilaterally in persons who frequently have moderate to marked hyperopic errors of refraction. With such a refractive error the nerve heads may appear small on ophthalmoscopic examination. The disk outlines are blurred and the physiologic cups are small or absent. As a rule there is no hyperemia of the disk and venous dilatation is absent. There may be some congenital tortuosity of the retinal vessels but this when present involves the arteries as well as the veins. Exudates and hemorrhages are absent and there is no edema of the surrounding retina. With correction of the refractive error vision is normal. The blind spots are of normal size and the peripheral fields of vision full.

DRUSEN (HYALINE BODIES) OF THE OPTIC NERVE

Drusen (hyaline bodies) are small spherical refractile bodies occurring either on the surface of the optic nerve or in its substance and variously considered to be due to degenerative changes in old hemorrhages or exudates or to degeneration of excess neuroglial tissue. Hyaline bodies usually occur as a bilateral



FIGURE 4. Appearance of the fundus in a patient with drusen of the optic nerve heads. In both eyes the drusen could be seen as spherical masses at the neuroretinal margins. The appearance of the right disk closely simulates that of papilledema.

finding and when they lie superficially on the optic nerve resemble a grapelike cluster of small spherical bodies overlying the disk. When these bodies lie deeply within the substance of the nerve the nerve head may appear elevated and edematous. Frequently in these instances one or more of the drusen may be seen lying at the neuroretinal margin (fig 4). At times they are best seen in indirect illumination by throwing the circle

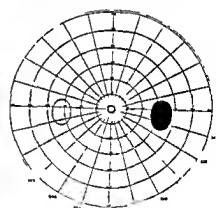
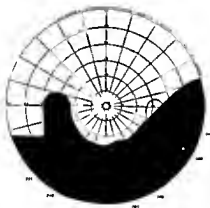
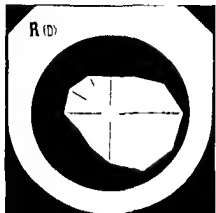
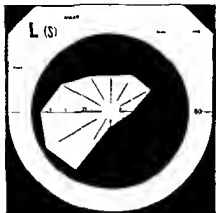


Fig 5. Central peripheral field of the patient (fig 4). The left shows light of the blind spot. The right shows a normal defect in the blind spot with normal periphery.

of light from the ophthalmoscope across one half of the nerve head and then looking at the opposite half. In fundi with drusen of the optic nerve there is frequently some degree of pallor of the nerve head and an absence of venous dilatation and tortuosity—findings which are useful in distinguishing this disorder from papilledema.

Good central vision is usually present in persons with drusen, although after some years central vision may decrease due to

an accompanying optic atrophy Rucker¹⁰ and Chambers and Walsh¹¹ have described characteristic field defects, such as nasal steps, enlargement of the blind spots, arcuate scotomas, extending from the blind spot to the periphery, small paracentral and central scotomas, and concentric constriction of the fields of vision (fig 5), which may occur in persons with primary drusen of the optic nerve with no other neurologic finding. Most of these changes are the changes which may occur in patients with chronic glaucoma.

Drusen of the optic nerve are sometimes present in persons with Bourneville's syndrome or tuberous sclerosis, a disorder characterized by drusen of the optic nerve, adenoma sebaceum, cerebral sclerosis, and retinal tumors.¹² In addition, persons with primary drusen of the optic nerves may develop bizarre sensory symptoms even in the absence of any positive neurologic finding.¹³ For these reasons it is important that drusen of the optic nerve be correctly recognized and distinguished from papilledema.

OPTIC NEURITIS

Optic neuritis as used here is synonymous with papillitis, i. e., the ophthalmoscopic appearance of the nerve head, and is limited to the intraocular portion of the optic nerve. The appearance of the optic disk depends on the duration, the causative irritant, and severity of the response.^{14, 15}

Optic neuritis usually occurs as a unilateral disorder in contrast to papilledema. In most cases which are seen early, because of the patient's subjective complaint of loss of vision, the disk appears red and hyperemic and at times may be difficult to distinguish from the surrounding red retina. The margins at first may be only slightly indistinct and the physiologic cup reduced in size and with no measurable elevation of the surface of the disk. Within a very short time the disk appears grossly blurred and the cup is lost. Usually the elevation is not marked, not over two diopters. The veins appear full, distended, and may be tortuous. The arteries are normal. Exudates on and about the disk may be associated with small, flame shaped, or round hemorrhages. There is usually a ring of peripapillary edema. As time goes on, the disk becomes less red and with increase in exudate assumes a blurred grayish appearance (fig 6). Hemorrhages outside the nerve head and peripapillary zone are uncommon. On the other hand, exudates may extend out to and include the macular area giving a typical star figure or partial one. If the process develops to this degree, the condition is spoken of as a neuroretinitis. Frequently where the reaction

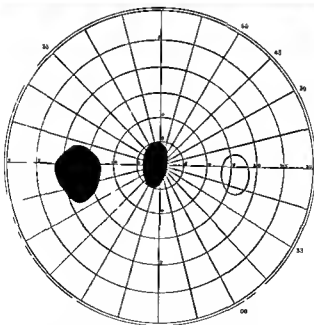


Fig. 6 Fundus photograph of the left eye of a patient with
 neovascularization of the retina and vitreous hemorrhage
 in the left eye of the patient.

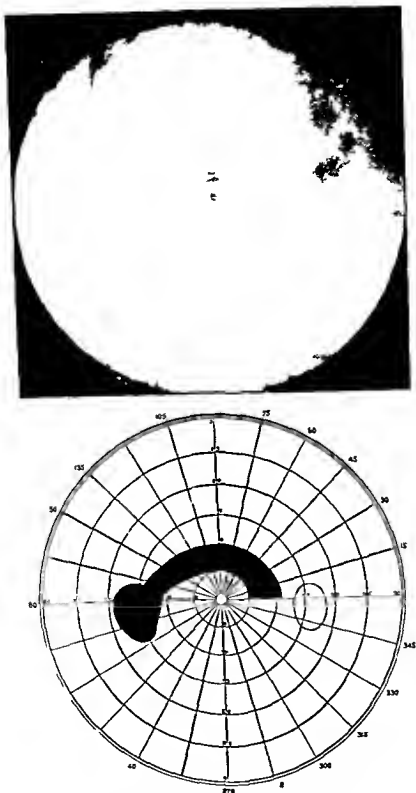


Figure 7 Fundus and central field of a patient with juxta papillary choroiditis showing edema of the temporal half of the nerve head and adjacent retina with a sector defect in the central field of vision.

is marked fine opacities in the vitreous can be seen with the ophthalmoscope

Ordinarily it would be difficult to distinguish between papilledema and optic neuritis on the ophthalmoscopic picture alone. If the condition is unilateral and remains so the diagnosis of papillitis is likely.

As referred to previously the main point in differentiating this condition from papilledema is the loss of central vision which is out of proportion to the appearance of the fundus. Typically there is a central scotoma because the highly specialized papillomacular fibers are more sensitive to insult (fig 6).

It must be remembered that optic neuritis is part of a disease process not only of the central nervous system but of many systemic diseases namely acute and chronic infections metabolic disorders poisonings anemias et cetera.

Although in many cases of optic neuritis no cause can be demonstrated at the time the most common cause is multiple sclerosis. It is well known that other associated signs of the disease may not appear for many years.

JUXTAPAPILLARY CHOROIDITIS

Juxtapapillary choroiditis or Jensen's retinochoroiditis is a choroiditis occurring adjacent to the optic disk. Its appearance again depends on the stage at which it is observed. The disorder is usually a unilateral one.

Early it appears as a yellowish or dirty white fluffy lesion with indistinct margins and surfaces. There are usually dust-like floating vitreous opacities. When the papilla is involved in the process it becomes indistinct and its appearance may closely resemble papilledema (fig 7). The retinal vessels are frequently obscured in the exudate and edema though more marked than that occurring in papilledema. It is limited to the side of the lesion.

Vision usually remains good unless vitreous opacities become pronounced or unless the macular fibers become involved in the choroiditis. The fields characteristically show a sector defect with the apex at the blind spot extending into the periphery or to the median raphe (fig 7). With healing as in choroiditis generally the area becomes white with varying amounts of pigment deposition and is circumscribed with irregular margins. The vitreous clears but the sector field defect persists.



Figure 8. Appearance of the fund in a patient with medullated nerve fibers showing the white striated masses overlying both the nerve heads and adjacent vessels

MEDULLATED NERVE FIBERS

Normally in man the optic nerve fibers lose their myelin sheaths as they traverse the lamina cribrosa. However not uncommonly they are seen ophthalmoscopically adjacent to the disk as white striated irregular areas with fimbriated or feathery margins of various sizes and shapes (fig 8). The retinal vessels are usually covered over by these opaque areas but if the area is small and less dense it will appear yellow.¹⁴

Vision is routinely good in persons with medullated nerve fibers and the peripheral field is normal, but the blind spot is enlarged and corresponds to the area of opaque fibers overlying the deep or retinal elements.

SUMMARY

The early recognition of papilledema is obviously of great importance but is often difficult because of a number of disorders of the optic nerve which it may closely simulate. Among these are pseudopapilledema, optic neuritis, drusen, juxtapapillary choroiditis, and medullated nerve fibers. The salient features of each of these have been described to aid in evaluating blurred disks.

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OSLER FOUND THE TIME

Many physicians are so engrossed with the practice of medicine that they are convinced mistakenly that there is no leisure time for reading. And yet physicians can find time to read if they will only imitate the successful reading habit developed by William Osler, one of the greatest of modern physicians. Osler's biographers attribute his usual accomplishments not only to a profound knowledge of medicine but also to a broad general education. Osler was intensely interested in the thoughts and performances of human beings. He realized that the sole method available to him for obtaining an inexhaustible fund of information about these matters was to read what others had written. Osler's problem was insufficient time for reading, the complaint uttered by so many of his fellow physicians; this was especially acute in his own case since Osler was an extremely busy physician in much demand as a teacher, a prolific writer, a versatile speaker, and an intrepid research investigator. Osler was able to arrive at a satisfactory solution early in his career. It became a habit of his to read the last 15 minutes before retiring, and this habit he pursued during a long lifetime. One story has it that Osler was unable to fall asleep without engaging in the customary 15 minutes of bedtime reading. During his life, Osler read a significant number of books enough to furnish a well-stocked library. Nor was his reading limited to medicine; he developed an avocational specialty to balance his vocational specialization, gaining fame as an authority on Sir Thomas Browne, the 17th century master of English prose. Even though Osler was for many years engrossed with medical research, the reform of medical teaching, and the introduction of modern clinical methods, he was able to supply an effective answer to the question busy physicians often ask themselves: "When will I find time to read?"

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CLINICAL USE OF THE DEPOLYMERASES OF STREPTODORNASE

JOSEPH M MILLER M D
MILTON GINSBERG M D
JOHN A SURMONTE M D
FRANK B ABLONDI A B
JOHN H MOWAT Ph D

STREPTODORNASE discovered during the investigation of streptokinase has been proved to be a valuable therapeutic agent in the treatment of infected wounds Streptodornase requires catalytic activation by the magnesium or manganese ion.

Streptodornase reduces the viscosity of pus which is thick from the presence of desoxyribonucleoprotein. Desoxyribonucleoprotein and desoxyribonucleic acid constitute from 30 to 70 per cent of the sediment in viscous purulent exudates Johnson by studying the changes produced by varidase (brand of streptokinase streptodornase) using the Feulgen method of staining has shown that a large part of chronic inflammatory exudate is composed of dying and dead cells A marked decrease in the number of such forms however follows the use of varidase Collections of clumped leukocytes are broken up The clumping of the leukocytes is apparently due to the presence of desoxyribonucleoprotein which is depolymerized by streptodornase An increase in the number of effective leukocytes thus results

The nucleoproteins are compound proteins containing nucleic acids as a prosthetic group Desoxyribonucleic acid upon hydrolysis by the group of enzymes contained in varidase yields phosphoric acid desoxyribose purines and pyrimidines a result almost similar to that achieved by acid hydrolysis Varidase would appear to contain a series of progressively acting closely related and highly specific enzymes The first enzyme apparently acting on this highly polymeric molecule is a depolymerase which causes a great change in viscosity This action resembles that of the crystalline desoxyribonuclease derived from the pancreas as described by Kunitz At this stage however the varidase mixture of enzymes in contrast to pancreatic dornase contains one which acts upon the end products of the depolymerizing enzyme The second group of end products in turn is acted upon by

F m v Adm H p 1 F H wa d Md. d b L d 1 Labora
D on Am Cy nm d C mp y P 1 R1 N Y

a third enzyme to give a third mixture of end products, until a complete digestion is attained

With the availability of an experimental lot of the depolymerases of streptodornase, free of streptokinase, it became of interest to compare its clinical efficiency with varidase, which contains streptokinase, streptodornase, nucleotidases, and nucleosidases

METHODS OF USE

The depolymerases of streptodornase may be administered in solution or suspended in lubafax (brand of surgical lubricant). The contents of each vial containing 100,000 units of activity are usually dissolved in 10 to 20 ml of physiologic saline solution, the amount of diluent depending upon the concentration of the enzyme desired for the specific patient. A more dilute solution has been used successfully when 200,000 units were dissolved in 1,000 ml of physiologic saline solution for the treatment of a large burn. In general, however, for the treatment of localized collections of pus, the stronger concentrations of enzymes are desired. The powder dissolves readily with gentle swirling. To facilitate the application of the enzyme to a flat external surface, 100,000 units of the depolymerases may be suspended in 30 ml of lubafax. Solutions of the depolymerizing enzymes of streptodornase in physiologic saline solution should be made fresh daily and stored in a refrigerator when not in use. The suspension of depolymerases of streptodornase in lubafax will keep its potency for several days and should also be stored in a refrigerator.

The depolymerases of streptodornase should not be administered systemically, for a local effect, only, is desired. Furthermore, the effects of the intravenous administration of the depolymerases of streptodornase are unknown.

Allergic reactions to the depolymerases of streptodornase have not been observed. Because the enzymes are antigenic, however, their administration should be associated with the usual precautions. Although Hazlehurst⁷ has observed that a high titer of antistreptodornase has always developed after the administration of significant amounts of streptodornase, he has not observed significant interference with the therapeutic effects of the enzyme after prolonged administration. If a decrease in the therapeutic effect is noted during the later stages of treatment after a good initial response, it might be well to increase the amount of the depolymerases of streptodornase used.

PRINCIPLES

The principles guiding the use of the depolymerases of streptodornase are essentially those of varidase, or streptodornase. The

depolymerases of streptodornase will not cause lysis of fibrin and therefore should not be used where removal of a sterile collection of blood is desired

1 Slough must be removed from the wound because the depolymerases of streptodornase will not liquefy it

2 Foreign bodies must be removed from the wound

3 The blood supply to the area must be adequate to provide magnesium ion to activate the depolymerases of streptodornase

4 An excess rather than a minimal amount of the depolymerases of streptodornase must be provided

5 The propeptid must be maintained

6 The depolymerase of streptodornase must be placed in direct contact with the pus

7 The products of digestion must be removed effectively and frequently. Because the amounts of the substrates and the enzymes come to an equilibrium the end product must be removed to prevent reversal of the reaction. In addition removal of the digested pus permits more effective action of the humoral mechanisms and of the particular chemotherapeutic or antibiotic agent used. Likewise removal of such products will prevent the formation of a dead space and encourage apposition of walls of the wound which are conditions necessary for healing.

8 Treatment of severe infections should be on a continuous rather than on an intermittent basis

9 The concomitant use of selected chemotherapeutic or antibiotic agent is indicated

TABLE 1 Results of treatment with the depolymerase

Disease	Number of Patients	Results	
		Excellent	Good
Abscess	15	13	2
Burn	1	1	0
Pilonidal	1	0	1
Tuberculosis	3	3	0
Total	20	17	3

The series consists of 20 patients who had a wide variety of infections (table 1). Fifteen patients had abscesses of various types, three had tuberculosis, one had a severe burn, and one had

pneumonia In the patient with pneumonia, the depolymerases of streptodornase were put in a solution which was used as an aerosol

CASE REPORTS

Case 1 A 58 year-old man was admitted to the medical service of the hospital on 14 March 1953 for the treatment of advanced bilateral pulmonary tuberculosis The patient received streptomycin and sodium para-aminosalicylate A mass developed over the cartilage of the right seventh rib Fluctuation and spontaneous drainage occurred but recurrent episodes of drainage were noted The roentgenograms of the chest did not show osteomyelitis of the ribs The patient was seen by a surgical consultant on 5 August a diagnosis of tuberculous abscess was made and incision of the area recommended

On 17 August the sinus and the cartilage of the seventh rib were excised Two No 18 French rubber urethral catheters were placed in the wound which was then packed with nylon gauze The pathologist's report of the excised tissue was of tuberculosis

The depolymerases of streptodornase 50 000 units in 2.5 ml of physiologic saline solution were injected through one of the catheters into the wound twice daily from 18 to 20 August The catheters were clamped for four hours to permit digestion Air-vent suction of about -8 cm of water was applied to the wound until the time of the next injection The catheters accidentally came out on 20 August Once a day for the next 11 days 10 000 units of the enzymes in 3 ml of lubafax were placed into the wound after which it was clean enough so that a secondary closure could be done on 1 September Eight days later the wound was healed The patient was transferred to the medical service for further treatment of the pulmonary tuberculosis on 11 September When he was seen on 16 April 1954 the wound had remained healed

Case 2 A 63-year old man was admitted to the medical service of the hospital on 23 June 1953 for the treatment of pericarditis The roentgenogram of the chest was essentially negative Repeated examinations of the sputum were negative for acid fast bacilli

On 31 August the patient was seen by the surgical consultant because of a sinus in the right infraclavicular area which had been present for about two months It was thought that this was due to a tuberculous lymphadenitis The diseased supraclavicular lymph nodes and the sinus were excised on 4 September and the wound was left open being packed with nylon gauze The pathologist's report was fibrocaseous tuberculosis of the lymph nodes and soft tissues with formation of a sinus tract The patient was given penicillin streptomycin and sodium para-aminosalicylate In addition 15 000 units of the depolymerases of streptodornase in 5 ml of lubafax were applied to the wound once a day

The depolymerases of streptodornase were supplied by the Lederle Laboratories Division American Cyanamid Company Pearl River N.Y.

from 5 through 14 September it became clean and secondary closure was done on 15 September. Nine days later the wound was healed and the patient was transferred to the medical service for further treatment. When he was seen on 16 April 1954 the wounds had remained healed.

Case 3 A 43-year-old man was admitted to the medical service of the hospital on 3 July 1953 with a fixed mass in the left lower quadrant of the abdomen. The patient was seen in surgical consultation on 9 July and appropriate laboratory studies for a diagnosis were recommended. The mass gradually became soft. A diagnosis of a left psoas abscess was finally made. The abscess was incised on 21 July with evacuation of about 500 ml of pus. Two No. 16 French rubber catheters were placed in the wound which was then packed with nylon gauze. Culture of the pus yielded a species of micrococcus. The depolymerases of streptodornase 100 000 units in 10 ml of saline solution were injected through one of the catheters into the wound twice daily from 21 through 28 July. The catheters were clamped for four hours to permit digestion. Air vent suction of about -8 cm of water was applied to the wound until the time for the next injection. On 27 July the cavity held about nine milliliters. The catheters were removed on 29 July. Due to moderate increase in the amount of the purulent drainage treatment with 100 000 units of the depolymerases of streptodornase in 5 ml of physiologic saline solution was given from 1 through 11 August. Progressive healing was noted. The depolymerases of streptodornase 15 000 units in 5 ml of lubafax were applied to the wound twice daily from 12 through 21 August. The wound was healed and the patient was discharged on 25 August.

Case 4 A 29-year-old man was admitted to the surgical service of the hospital on 27 July 1953 with a history of pain in the right lower quadrant of the abdomen and chills and fever of about five days duration. An appendectomy had been done when the patient was four years of age. At the age of 28 an incision and provision for drainage of a retrocecal abscess had been made. At this admission a firm mass associated with a considerable degree of cellulitis was present in the right lower quadrant of the abdomen. A gradual resolution took place in the ensuing period and on 5 August an incision was done and about 300 ml of pus were evacuated. Two No. 18 French rubber catheters were placed in the depths of the wound which was packed with nylon. The culture of the pus showed *Escherichia coli*. The depolymerases of streptodornase 100 000 units in 5 ml of physiologic saline solution were inserted through one of the catheters twice daily from 6 through 17 August. The catheters were clamped for four hours to permit digestion and air vent suction of about -8 cm of water was applied to the wound until the time for the next injection. The cavity held about 20 ml on 8 August and about 10 ml on 13 August. The catheters were removed on 12 August. The depolymerases of streptodornase 10 000 units in 3 ml of lubafax were applied to the wound twice daily from 18 through 24 August on which day the wound was found to be healed. The patient

was discharged from the hospital three days later and instructed to return for further treatment and possible operation in about three months. He was admitted to the hospital on 30 November and examination showed essentially normal findings. The patient refused operation and was discharged from the hospital on 16 December 1953.

Case 5 A 28 year old man was admitted to the hospital on 26 August 1953 with an infection of about six weeks duration in a recurrent pilonidal cyst. Nine operations had been done elsewhere at different times to eliminate the infection. The last operation had been done at the hospital on 12 January 1949. An infected pilonidal sinus about 2 cm long from which pus was draining was present. On 28 August the sinus was incised and drainage provided by a nylon pack. Crystalline procaine penicillin G was administered from 28 August through 5 September but the wound did not become clean. About 15 000 units of the depolymerases of streptococcus in about 5 ml of lubafax were then applied to the wound twice daily from 10 through 16 September. When the patient was discharged from the hospital two days later the wound was healed.

Case 6 A 36-year-old man was admitted to the medical service of the hospital on 11 September 1953 with a history of chills and fever of about 10 days duration. About six days prior to admission he noted pain in the right chest and axilla which was aggravated by breathing, coughing and movement. Previous treatment had consisted of the administration of penicillin and one of the sulfonamides. The patient had served in the South Pacific theater of operations during World War II and had had amebiasis, dengue fever and malaria.

There was a moderate degree of tenderness and dullness to percussion over the right posterior hemithorax. Crackling rales on inspiration were heard in the same area. A slight degree of tenderness was present in the epigastrium and the right upper quadrant of the abdomen. The patient continued to have chills and fever with the temperature rising as high as 106° F. Penicillin and chloromycetin (brand of chlortamphenicol) were administered with little effect. The white blood cell count rose to 30 200 per cu mm of which 83 percent were polymorphonuclear neutrophilic leukocytes and 17 percent were lymphocytes. Repeated blood cultures were sterile. The various agglutination tests were negative. Repeated examinations of the stool for ova and parasites were negative.

On 12 October a roentgenogram of the chest revealed an elevation of the right side of the diaphragm and on fluoroscopy movement of the right side of the diaphragm was not seen. The patient was seen in surgical consultation and it was thought that a right subdiaphragmatic abscess or an abscess in the liver was present. Aspiration of the subdiaphragmatic space however did not yield pus. The clinical picture however strongly indicated that pus was under the diaphragm.

On 13 October a right subcostal incision was made and the liver palpated. Many dense adhesions circumscribed a firm mass about 10

cm in diameter high on the lateral surface of the right lobe of the liver. Aspiration of the site through the sixth intercostal space in the midaxillary line over the adherent area produced pus. A segment of the seventh rib about 4 cm long in the midaxillary line was removed and about 200 ml of thick yellow brown pus was removed from the abscess. Two No. 18 French rubber catheters were inserted into the cavity. After a change of rubber gloves, superficial dressings and instruments, the subcostal wound was closed.

The pus was sterile aerobically and anaerobically. Penicillin and streptomycin were administered postoperatively. The depolymerases of streptodornase 100,000 units in about 10 ml of saline solution were put into the abscess cavity twice a day from 14 through 28 October. The catheters were clamped for four hours to permit digestion and then the pus which had become much thinner was permitted to drain into a bottle. From 16 through 28 October air vent suction using a Stedman pump was applied to the abscess cavity during the periods the catheters were not clamped. Two hundred milliliters of much thinner purulent drainage were collected from 14 to 17 October while from 17 to 21 October another 200 ml were collected. The drainage gradually decreased and the abscess became smaller. A culture of the pus on 24 October showed *Pseudomonas aeruginosa* and *Staphylococcus pyogenes*. The catheters were gradually shortened and then removed on 5 November. The wound was healed on 16 November. Three days later the patient was discharged from the hospital and on 18 February 1954 he was asymptomatic and showed a 23-pound gain in weight. The lungs were clear, the wound healed and the liver not palpable.

Case 7 A 29-year-old man was admitted to the hospital on 15 September 1953 for the treatment of bilateral cervical tuberculous lymphadenitis of about nine years' duration. A course of streptomycin given previously had not produced a good therapeutic result. The patient was given streptomycin sodium paraaminosalicylate, hydrazid (brand of isoniazid) and penicillin—the last for treatment of coxsackievirus. On 2 October the infected lymph nodes on the right side of the neck were excised and about 5 ml of free pus were encountered. Two No. 18 French rubber catheters were placed into the wound. The pathologist's report of the excised tissues was of fibrocaceous tuberculosis. The depolymerases of streptodornase 50,000 units in 5 ml of physiological saline solution were injected into the wound twice a day from 3 through 12 October. The catheters were clamped for four hours to permit digestion and then air vent suction of about 8 cm of water by means of a Stedman pump was applied until the time of the next injection. The catheters were removed on 12 October and on 15 October the wound was healed. Four days later the infected lymph nodes in the left side of the neck were excised and a similar course of treatment pursued. The catheters were removed on 27 October and three days later the wound was healed. Several small lymph nodes in the posterior cervical region were removed on 3 November. The wound was closed and drainage

age provided by a Penrose drain which was removed the following day. The wound was healed on 12 November and the patient was discharged from the hospital five days later.

Case 8. A 41 year old man was admitted to the hospital on 29 September 1953 with first, second and third degree burns of about 20 percent of the right side of the body, incurred on 26 September. The patient had been treated at another hospital and then had been transferred for further treatment. The patient was given aureomycin, streptomycin and penicillin. The dressings were removed on 1 October and a moderate degree of infection of the burns was found. Four No. 18 French rubber catheters were placed down to the burns and a voluminous gauze dressing was applied. The depolymerases of streptodornase, 100,000 units were dissolved in 1,000 ml. of physiologic saline solution and allowed to drip through the catheters twice daily from 1 through 15 October when the dressings were changed and the burns found to be clean enough to receive split skin grafts. On 22 October about a 90 percent take of the skin grafts was found and more skin grafts were applied. Healing was found to be satisfactory eight days later the burned area was then almost entirely covered by additional skin grafts. On 5 November two small areas were found to need additional grafting but due to a slight degree of infection the procedure was postponed and treatment by tub baths was given. On 19 November the wound looked good and the additional areas were grafted but only about a 20-percent take resulted. The patient was given physiotherapy. The remaining ulcers healed slowly and additional skin grafts to the small areas were done on 2 and 18 February 1954. The wounds were healed when the patient was discharged from the hospital on 12 March 1954.

COMMENT

The use of depolymerases of streptodornase in the treatment of infected wounds has produced faster healing than has occurred in similar wounds not treated with the enzymes. The digestion of desoxyribonucleoprotein and desoxyribonucleic acid has not produced substances which are toxic or detrimental to the healing of wounds. The 20 patients treated had infections due to a wide variety of bacteria. The experience gained in this study by using the depolymerases of streptodornase alone substantiates earlier work in which varidaso, a combination of streptokinase and streptodornase was used clinically. Infected wounds usually contain fibrin and it is advantageous to have the streptokinase present with the streptodornase.

SUMMARY

The depolymerases of streptodornase, by their enzymatic properties, effect the digestion of desoxyribonucleoprotein and desoxyribonucleic acid, when the compound can be brought into direct contact with pus for a sufficiently long period. The digests

tion of pus by the depolymerases of streptodornase and the removal of the pus facilitates the formation of healthy granulation tissue and the earlier healing of infected wounds

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THE HIPPOCRATIC PHYSICIAN

One of the outstanding characteristics of Greek medicine (at the time of Hippocrates) was its freedom from superstition magic and witchcraft. Inevitably some of the Greek views on physiology and pathology appear fantastic to our enlightened eyes. Their fantasy does not deter, however, from any injection of the superstitious element but simply because the wide ranging intelligence rising up or to all ideas of experimentation or proof launched itself into the working fields of imaginative speculation on wings that were scarcely fitted to these flights. Some of their guesses—perhaps kinder words than speculation—come near to the atomic theory and the bacterial cause of disease. All in all then it was relatively easy for the Greek physician to be sane and honest practitioner of his art serving his patients to the best of his ability and relying largely on his simple therapy and the beneficent operation of the *vis medicatrix naturae*.

—SIR JOHN CHARLES M D

L a t

p 455 F b 27 1954

AN OUTBREAK OF ACUTE EPIDIDYMITIS ASSOCIATED WITH PNEUMONITIS

EDWARD GARTMAN *Lieutenant Colonel MC USAF*

BETWEEN 26 February 1951 and 10 March 1951, 41 men, ground crew personnel from an Air Force squadron stationed at a small base in Northern Kyushu, Japan, were admitted to this hospital with acute epididymitis. An additional 10 or 12 men with this condition were hospitalized elsewhere because of lack of bed space in the urologic section of this hospital.

All 41 patients presented a relatively consistent picture. They were between 19 and 29 years of age. The disease was ushered in with generalized malaise and a sense of chilliness, followed shortly by the appearance of a painful swelling of one epididymis, never both. In 12 patients the onset was either immediately preceded or accompanied by a dry, hacking, nonproductive cough and pain in the chest. None of the patients had any urinary symptoms.

The men were acutely ill, 37 had fevers ranging from 101 to 103 F. Seven had physical and radiologic evidence of a basal pneumonitis, three others had scattered rales throughout both lung fields, while the chests of the remaining 31 were clear. All had the typical findings of an acute epididymitis, uncomplicated by either an acute hydrocele or orchitis. Only the globus major was involved in 40 patients. They were more ill than patients with ordinary nonspecific epididymitis, but had none of the prostration and raging septic fever of adults with the orchitis of mumps. Aside from a varying though generally mild leukocytosis, all laboratory findings were within normal limits, and there was no pyuria.

These patients were treated symptomatically with analgesics, elevation of the scrotum, applications of ice, and absolute bed rest. No antibiotics were used. Both the epididymitis and pneumonitis subsided spontaneously in an average of 10 days; no delay in the resolution of the epididymitis accompanied by pneumonitis was noted. Patients with ordinary epididymitis treated on an identical regimen usually require an average of five days

From the 141st General Hospital, Kyushu, Japan. C. L. Gartman is now Ignatius Army Hospital, Sill, Oklahoma.

The lesions are contagious and autoinoculable tending to spread and recur until completely eradicated. Some authorities believe that verrucae of this sort are pathognomonic of gonorrheal infection, but this has not been the experience of this author or of others. There does however seem to be a direct relationship to irritating vaginal discharges particularly trichomonas vaginitis in women causing the warts in both men and women. In all instances this possible association should be ruled out or treated appropriately. The elimination of trichomonads often lengthy and tedious is beyond the scope of this report. The importance of personal hygiene measures is stressed.

TREATMENT WITH PODOPHYLLUM RESIN

Numerous forms of therapy have been recommended for venereal warts as for other types of verrucae. Older methods include the use of alicylic acid, mercurous chloride, trichloroacetic acid and potassium permanganate. Recent treatment, electrocauterization and surgery have also been employed. Since the original report by Kaplan¹ in 1942 on the efficacy of podophyllum resin, however, variations of this method have become recognized as the therapy of choice.

Podophyllum is the resinous product of the May apple or mandrake root which also contains the constituent podophyllotoxin. It was long used as a cholagogue and cathartic. Podophyllum resin in either light petrolatum or mineral oil was first used and the dramatic results of a single application to venereal warts caused interest among other investigators. Varying the media. Podophyllum resin has since been used in mixture with ethyl alcohol, flexible collodion, tincture of benzoin and other agents. Currently the commonly used forms are 25 percent podophyllum resin in oil and 20 percent podophyllum resin in 95 percent ethyl alcohol. Recent work by Sullivan and Hearsh² indicates that the active principle of the mixtures is a peltatin, a crystalline product of the resin. They have found a mixture of 1 percent peltatin in tincture of benzoin as efficacious as the podophyllum resin mixtures and the peltatins have the added advantage of producing less irritation. Further peltatins may be dissolved in caustic bases (which cause loss of potential of ordinary podophyllum resin) aiding in the treatment of cornified warts. The peltatins are very promising.

The mode of action of podophyllum resin was first thought to be based upon spasm of blood vessels causing necrosis. It is now established that podophyllum products selectively alter cellular metabolism in the warts causing cell death. Histologically typical dead cells show distorted mitotic figures and are termed podophyllum cells. These are similar to colchicine figures suggesting that colchicine might prove effective in-

deed, colchicine solutions have been used with excellent results, but are not recommended because of the severe toxicity of the drug

Podophyllum and the related compounds have been used in the treatment of numerous other conditions including verruca vulgaris, verruca plantaris, neurodermatitis, and carcinomas of the skin and bladder.¹¹ Nowhere have the results been as uniformly good as in the treatment of venereal warts

METHODS AND RESULTS

I have carried out podophyllum resin treatment of 20 consecutive patients with venereal warts, using either petroleum or alcohol as the vehicle. In all instances regression occurred, and in nine patients only one application was necessary for complete cure. The greatest number of applications made was seven in one white male patient who over a six month period had repeated growth of condylomata acuminata on the frenulum of the penis. His wife was suspected of having severe trichomonas vaginitis, but did not appear for treatment. In general there was no difference in the course or result of those treated with the oil mixture as compared with those treated with the alcohol mixture, although there was less skin irritation in those treated with podophyllum resin in alcohol.

The series consisted of two women and 18 men, all white with the exception of one Negro. The lesions varied in size, location, and duration, but in the men were predominantly on the frenulum and at the retroglandular sulcus. All patients responded well with minimal discomfort during treatment except two patients with large clusters of perianal warts. The latter two had lesions moderately resistant to therapy, and they suffered some discomfort in the initial treatment period.

A simple and consistent regimen was followed with all patients. After a cleansing of the affected areas, the podophyllum resin mixture was applied liberally with a cotton applicator. Excess medication was removed with dry cotton, and patients were instructed to take sitz baths eight hours later to remove the remaining solution. On the following day, blanching of the warts was noted in all instances; necrosis ensued on the second and third days. Sloughing proceeded from the third to fifth days and, if necessary, additional application was made on the fifth to seventh day. In none of the patients did ulceration, infection, or scarring result. The author noted no ill effects of the podophyllum resin treatment, though epithelial hyperplasia has been reported.¹²

The prognosis following therapy with podophyllum resin is excellent and, if initial treatment is thorough, there is no reason

to believe that the warts will recur. It has been stated that the warts must be completely removed lest there be further growth. Of the 20 patients treated there were recurrences in only three. One was found in a man whose wife was suspected of trichomonas vaginitis; another also in a man; a possible regrowth recurrence in the third patient was of undetermined cause. All of the verrucae treated did respond, though those in the perianal region did so more slowly.

SUMMARY

Condylomata acuminata, relatively common in military practice, are discussed with respect to etiology, incidence, diagnosis, treatment, and prognosis. Podophyllum resin therapy is briefly presented with an accepted regimen of treatment. The dramatic results of such treatment in 20 patients coincide with the experience of others.

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FOREIGN BODIES IN THE GASTROINTESTINAL TRACT

ROBERT T GANTS *Colonel MC USA*
JACK B JAY *Major USAF (MC)*

THE MEDICAL literature contains innumerable records of persons who have swallowed objects of various sizes and shapes by accident or intent.

Accidental swallowing of a foreign body is by far the more common, and occurs predominately in infants and children. It also happens in adults when they are startled or when seized by a coughing spell while a foreign body is in the mouth. Case 3 illustrates this point. Deliberate swallowing of an object or swallowing on a dare has been reported most commonly among psychotic patients¹ and malingerers. Hysterical anosthesia in some patients may permit ingestion of large or even sharp objects.

About 25 percent of all swallowed foreign bodies lodge somewhere in the esophagus.² This is a problem for the endoscopist and will not concern the surgeon unless complications, as illustrated in cases 2 and 3, occur. Almost all foreign bodies which lodge below the esophagus will do so in the stomach or duodenum. If the object has passed the duodenum, complete passage, in most instances, may be expected.³ A few cases of entrapped foreign bodies in the appendix, ileocecal valve, or in a Meckle's diverticulum have been reported.

SYMPTOMS

Most of those patients have few, if any, gastrointestinal symptoms. This is especially true in psychotic patients in whom unexplained clinical or roentgenographic findings may be the first evidence of a foreign body.⁴ Ordinarily there is a long latent period between the time of ingestion and the onset of clinical signs of a complication.

Perforation rarely occurs but when it does it takes place very slowly and is walled off by inflammatory changes. Low grade fever, mild abdominal pain, and localized tenderness are usually all that can be elicited. Minor bleeding and vomiting may also occur. Because of the lack of symptoms, ingested foreign bodies

are usually suspected on the basis of the history and confirmed by roentgenographic examination, because fortunately almost all foreign bodies are radiopaque. Roentgenologic examinations are also useful in following the progress of the foreign body through the gastrointestinal tract. Unfortunately, however, they are not too reliable for pinpointing the exact location of the object.

TREATMENT

Practically any foreign body which reaches the stomach will be passed spontaneously and the stools should be thoroughly examined each day until the object is found. The patient should remain on his normal diet and no laxatives should be administered because increased peristalsis caused by laxatives and bulky foods increases the danger of perforation of the gastrointestinal tract in the presence of a foreign body. Strenuous physical activity should not be permitted when the ingestion of sharp foreign bodies is suspected.

INDICATIONS FOR OPERATION

Indications for surgical intervention are (1) roentgenologic evidence of retention of a foreign body in one position over a period of several days especially in the case of such sharp objects as open safety pins, needles, nails, glass, etcetera; (2) foreign bodies of such size and shape that passage is impossible; and (3) clinical evidence of perforation or obstruction. Smooth objects may take from several days to several weeks to pass through the gastrointestinal tract and they cause no significant damage. The treatment in each case must be judged individually because no set rule applies to all.

CASE REPORTS

Case 1. A 20-year-old man was first hospitalized in December 1953 for bizarre behavior and a diagnosis of paranoid schizophrenia was made. The patient was preoccupied with sexual problems and on several occasions attempted to insert various articles into the rectum. Subsequently he received electroconvulsive therapy. On 27 March 1954 the patient told the nurse he had swallowed an eighth-inch lead pencil three weeks previously but he was asymptomatic. On 3 May he began to vomit and complained of generalized abdominal discomfort and had a low-grade fever and leukocytosis. He had been having loose stools for three days but they contained no blood. There were no localizing abdominal signs or other evidence of peritonitis. An abdominal roentgenogram was interpreted as showing no abnormalities. Fluids administered intravenously and penicillin were started and the symptoms subsided. The patient was allowed to be out of bed and following an unauthorized game of basketball the symptoms recurred. More roentgenograms of the abdomen were made. The first roentgenogram showed

the outline of the lead pencil lying horizontally in the stomach. The second roentgenogram showed the object lying vertically in the second part of the duodenum (fig 1). A laparotomy was performed on 12 May and through a small duodenotomy a lead pencil five and three-fourth inches long was easily removed. The point was directed upward and had perforated into the under surface of the liver near the gallbladder.



Figure 1 (case 1) Roentgenogram of abdomen showing wooden lead pencil lodged in second portion of duodenum

Surrounding the hepatoduodenal ligament a marked inflammatory reaction had effectively sealed off the perforation in the duodenum from the general peritoneal cavity. The patient's postoperative course was uneventful.

Case 2 A 42 year-old woman was admitted to the hospital for electroconvulsive therapy because of depression and suicidal thoughts. A history of bizarre suicidal attempts such as stuffing toilet paper into her throat was obtained. She had a low grade temperature elevation. A roentgenogram of her chest on 5 June 1952 showed no abnormalities. The patient was given one electroshock treatment. On 2 July a repeat roentgenographic examination of the chest revealed a left pleural effusion. Because of this electroshock therapy was

discontinued and insulin therapy substituted. There was a progressive clearing of the chest and on 11 February 1953 a metallic foreign body resembling a sewing needle was seen near the left pericardophrenic angle. The patient repeatedly denied swallowing the needle. A left thoracotomy with removal of a sewing needle from the base of the pericardium opposite the apex of the heart was done on 26 February 1953. Only a few fine adhesions were observed between the base of the lung and the dome of the diaphragm. The postoperative course was uneventful.



Figure 2 (c) 3) Posterior or low bowing the metallic mass

Case 3. A 42-year-old man was struck by an automobile on 25 December 1951. He sustained a fracture of the left parietal bone and a simple fracture of the right tibia and fibula. On 4 January 1952 a right subdural hematoma was successfully evacuated. On 13 January the patient stated that he had accidentally swallowed a clinical thermometer during a coughing spell (fig. 2). Open reduction and internal fixation of the fractured tibia plus gastroscopic examination were carried out under general anesthesia on 5 February. During the prolonged attempt to remove the thermometer through the gastroesophageal patient became cyanotic and had a marked fall in blood pressure. Immediate

physical and roentgenographic examination of the chest revealed a complete left pneumothorax indicating a perforation of the esophagus. A closed left thoracotomy drainage was immediately instituted to drain the expected empyema which subsequently developed. A Levine tube was placed in the stomach for decompression. Under this management the fistula soon closed and on 20 February gastrotomy with removal of the thermometer was accomplished. The thermometer had been in the stomach five weeks and had shown no evidence of moving. The patient's postoperative course was uneventful.

SUMMARY

The symptoms of swallowed foreign bodies are usually minimal and there is a long latent period between the incident of swallowing and the onset of clinical signs of complication. A good history and a high index of suspicion are the most important facets leading to a correct diagnosis. A patient's statements concerning swallowed objects should not be regarded lightly. Examination of roentgenograms by the physician immediately responsible for the patient's care is most important. Unexplained fever, pain, or roentgenographic findings should be carefully investigated. Repeated studies and examinations are often necessary to identify the presence of a foreign body. Only a few patients need be subjected to surgical removal of the foreign body, because most objects which have reached the stomach will pass on through the gastrointestinal tract. Surgical intervention should not be instituted on the basis of the history alone, but rather on the evidence of peritonitis, obstruction, or lack of progression of the foreign body through the gastrointestinal tract. In patients needing operative removal, the procedure is usually accomplished easily.

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When a man lacks mental balance in pneumonia he is said to be delirious. When he lacks mental balance without the pneumonia he is pronounced insane by all smart doctors.

—Martin T. Fischer

RESULTS

In 1954 trilene was used in the urologic outpatient clinic of this hospital in making 200 cystoscopic and six retrograde pyelographic examinations and five urethral dilatations. The results (from the viewpoint of the patient and the urologist) were considered good in 182 patients (86 percent) fair in 18 (8 percent) and poor in 11 (6 percent). Results were considered good when the patient was completely relaxed and offered no complaints during the procedure and recalled no discomfort after the trilene was discontinued. The results were termed fair when the patient was not entirely relaxed or complained moderately during the procedure but the procedure was successfully completed. The poor results indicated those procedures which were terminated because of discomfort to the patient. The use of trilene allowed the completion of 94 percent of the procedures attempted to the satisfaction of both the patient and the urologist. Furthermore the patient requires no preliminary fasting or medication and can return to duty directly from the clinic.

Because patients were expected to return to duty after the termination of the procedure side effects were carefully noted. These were agitation in 8 patients screaming 8 hallucinations 24 nausea 23 vomiting 2 weeping 1 hilarity 4 and severe tremor in 1 patient. The various side effects such as screaming weeping hilarity et cetera were not recalled by the patient after the analgesic was discontinued. The average time required by the patient to regain full control of his faculties was 3.5 minutes.

SUMMARY

Trichloroethylene inhalation was used for transurethral procedures on an outpatient basis in 211 cases. Its use was considered satisfactory in 94 percent. The absence of serious side effects and the rapid return of the patient to normal makes this the analgesia of choice in outpatient urologic procedures.

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You belong to companies boards / fellowships associations fraternal societies brotherhoods lodges unions and committees but what about your friends?—Martin T. F. Scher

ORAL LESIONS CAUSED BY ANTIENTZYME DENTIFRICES

WILLIAM B. SIMMS *Lieutenant Colonel, DC USA*

SINCE the addition of antienzymes to the various commercial dentifrices physicians and dentists are encountering a new oral lesion. This entity has taken many bizarre and complicated forms and its correct diagnosis necessitates inquiry as to the patient's use of antienzyme dentifrices. The symptoms have been alarming to most patients; a few developed neurotic fears such as cancerphobia, before the correct diagnosis was established.

SYMPTOMS

In most cases the primary symptoms associated with this condition were an irritated, painful mouth and a tingling or very sensitive tongue. Most patients were referred for consultation and diagnosis because the lesions were similar to the oral manifestations of systemic or local disease.

The tongue was most often involved and the sites most affected were the filiform papillae along the sulcus medianus linguae, the foliate papillae, and, occasionally, the dorsum. On rare occasions the floor of the mouth was involved. The patient usually describes his symptoms to the doctor in one of the following ways:

"I have a stinging, sore tongue, with little white spots.

My tongue is so sore I can hardly touch it with my teeth. I have noticed that it has no coating and is beefy red.

My tongue tingles and has a numb sensation. Foods do not taste as good as usual, and spicy foods irritate my tongue very much."

A white membrane is peeling from my mouth.

Many patients have a painful, raw, beefy red tongue and an oral mucosa varying in appearance from a moderate redness to a severe leukoplakia. The lesions may resemble herpetic stomatitis of the lip and buccal mucosa, herpes simplex, or any other variation thereof. They may present a carcinomatous appearance except for the fact that usually they are papular and vesicular rather

From *V. H. F. Army Medical School, Philadelphia, Pa.*

then indurated multiple rather than single and on digital examination are accompanied by severe pain. The diagnosis may be difficult because in some instances the distribution of the lesions may be local rather than general and they may be of several months duration.

The next most frequent symptom associated with this condition is a denudation of the buccal mucosa. A pale or whitish film is exfoliated from the buccal mucosa, and appears as if it were stripped off the surface epithelium. This film may come off in its entirety or it may come off in small strips. Bleeding rarely results but the stripped area appears beefy red. In appearance this white plaque is somewhere between that of a lichen planus and a slight leukoplakia of the buccal mucosa.

The soft palate is the third area most commonly affected; the uvula is involved only rarely. A small lesion was seen on this organ on only one occasion. Involvement of the soft palate usually extends down toward the tonsillar fossa, and nearly always consists of papillary vesicular lesions that appear to be tiny mucous cysts.

To recapitulate, the most common symptom is a burning painful tongue with or without thrushlike lesions that vary in size from 1 mm to 3 cm. Denudation of the buccal mucosa is the second most frequent finding.

A history of the use of antienzyme dentifrices is the most important factor in diagnosing this particular syndrome. The lesions were first observed clinically at the time the antienzyme dentifrices became available on the commercial market. In ascertaining the cause many laboratory procedures were performed to rule out all other diseases. Biopsied specimens showed only acute inflammation. Only one patient out of about 50 presented a coexistent leukoplakia.

Summaries of three cases may serve to illustrate the typical history, symptoms, and characteristics of this syndrome.

CASE REPORTS

Case 1 A 22-year-old married woman, seen in consultation, presented all of the lesions characteristic of this condition in a very acute form. Her tongue was painful and had a white glossy denuded appearance similar to that associated with early anemia. On her lips and particularly around the commisures were small herpeslike lesions. A white shiny filmlike material was sloughing off the buccal mucosa in strips. Nonulcerated papillary vesicles covered the soft palate and extended toward the tonsillar fossa. The palate was very painful and gave the patient considerable discomfort on swallowing. The uvula was not involved. The predominant symptom was that of pain and extreme en-

sensitivity of the mouth to anything in the way of food or liquids the tongue was so painful that the patient could barely endure its contact against the teeth

Her history revealed that for several years she had been using "X" dentifrice. Five days previously she had tried as usual to obtain "Y" dentifrice without antienzyme but all the pharmacist had in stock was "X" dentifrice with antienzyme.

The patient was told to discontinue the use of all dentifrices was given a nonirritating antacid mouthwash consisting of one tablespoon of milk of magnesia in one-half glass of warm water and was told to use only water to brush her teeth. All laboratory procedures including examination of a biopsied specimen of the area were normal except that the biopsied specimen showed an acute inflammatory reaction. At the end of three weeks the oral manifestations had disappeared.

The antienzyme dentifrice was only the suspected cause of this young woman's disease. Many systemic and local diseases accompanied by similar oral lesions were considered, but all laboratory tests failed to indicate any other cause. The patient had never used antibiotics, oral troches with antibiotics or drugs of any type nor had she changed her smoking habits. About two months after she was rid of the symptoms she used "Y" dentifrice without antienzyme without any harmful effects.

She was then asked to switch to "X" dentifrice with antienzyme for two days. Within 48 hours she experienced the same symptoms as before but to a less severe degree and had to discontinue the use of dentifrices for about three weeks. She then used "Y" dentifrice without the antienzyme for six months and had no further trouble. At the end of this time she again changed to "X" dentifrice with antienzyme and the oral lesions recurred within 48 hours. These cleared within three weeks. She has since changed to "Y" dentifrice without antienzyme and has since experienced no untoward effects.

Case 2. The experience of this patient parallels that of a considerable number of the patients studied in that only two symptoms of this condition were noted. These were a sensitive painful tongue and a white plaque-like film which peeled off the buccal mucosa in strips, leaving it raw. Except for the oral lesions his history and the findings of a complete physical examination and of various laboratory procedures were normal.

The diagnosis in this patient as in several others with similar conditions was puzzling because for several months he had been using "X" antienzyme dentifrice without any untoward effects. He then used "Y" antienzyme dentifrice for about two weeks.

This patient was treated in the same manner as was the first, and at the end of about one month he returned to using "X" antienzyme dentifrice without any ill effect. In co-operation with the study being made of this condition he again tried "Y" antienzyme dentifrice with a recur

rence of the symptoms previously described. It therefore appeared that his sensitivity was to the antienzyme in the Y dentifrice only and not to that contained in X dentifrice.

Case 3 This patient, a 26-year-old physician engaged in general practice and cognizant of the various oral manifestations of systemic and local disease presented a rather unusual case. In his efforts to discover the reason for his condition he had, during the past year, consulted numerous specialists, had many laboratory studies done, and had even been hospitalized on one occasion. No one had been able to give him positive relief, and because of the nature of the lesions he had developed a cancerphobia.

His history appeared to resemble that of patients in whom the lesions of stomatitis appear and disappear regardless of treatment. On closer questioning it was discovered that he and his wife had been rather indiscriminate in purchasing dentifrices. For several years they had used Z dentifrice and did not experience any difficulty. A year ago, however, they changed to the antienzyme dentifrices, usually purchasing a different brand each time they bought a dentifrice.

In recalling the course of his symptoms, the patient remembered that some of the dentifrices caused less severe symptoms than others; however, he could not remember which particular dentifrice he was using when the symptoms occurred most intensely. He did note, however, that seemingly with a change from one antienzyme dentifrice to another the symptoms became more severe. He described the lesions as occurring usually on the tongue and occasionally on the palate. At times his tongue became so painful that he could scarcely tolerate contact against his teeth, and swallowing became difficult. He had been eating a bland diet and could not tolerate contact of such items as toast or other types of roughage against his tongue.

When this patient was examined he had a very painful denuded tongue. Area about 3 cm in length resembled thrush. The papillae, which were almost vesicular in appearance, showed denudation. As in previous patients, clinical and laboratory examinations were normal.

The lesions responded very slowly to treatment, and a 2 percent aqueous solution of gentian violet seemed slightly to help the sensitive papillae of the tongue. After about two months, some of the lesions were treated once a day with a 4 percent solution of silver nitrate; this seemed to alleviate the sensitivity more successfully than did the 2 percent aqueous solution of gentian violet. Eventually the pain and lesion completely disappeared.

CONCLUSIONS

Many people are using antienzyme dentifrices without developing any of the afore-mentioned symptoms or lesions. It seems, however, that persons using antienzyme dentifrices should use one commercial brand, rather than switch from one to another.

because the cases described herein show that changing brands seems to build up or produce a sensitivity to the antienzyme

It is possible that the antienzymes, in addition to neutralizing the enzymes necessary to bacterial growth, also neutralize some of those enzymes which are necessary to the existence of the normal oral epithelium, thus producing a condition which causes a degeneration of the surface epithelial cells

In no way do I discount any of the merits of antienzyme dentifrices, but only wish to point out a new syndrome in the array of oral conditions. Many patients using the antienzyme dentifrices have stated that when they began using them they noted pain in the tongue and mouth which gradually disappeared on continued use of the dentifrice. Some patients have noticed the oral syndrome only after changing from one brand to another. Some have been unable to tolerate any type of antienzyme dentifrice. The majority of patients tolerate the use of antienzyme dentifrices, however it is my belief that presentation of these clinical experiences with the antienzyme dentifrices will be helpful in the differential diagnosis of certain oral lesions and will stimulate further research, study, and discussion

LETTER FROM GERMANY

The following paragraph was received by Major General I S Ravdin MC USAR from a former resident in surgery at present assigned to dispensary duty in Germany

Though I have said it before I want you to know that whatever my assignment is to be I will do the best I can. The government allowed me to finish my internship and some of my residency. I wasn't taken during the Korean war. I'm here and have my wife with me. Of course I would like to do surgery — but I know that I owe the government and the Army more than they owe me. A brief glimpse of these European countries makes it very clear that two years of service is a small price to pay for being an American citizen.

NORMAL BATTLE REACTION AND HORMONAL RESPONSE TO INJURY

WARNER F BOWERS Col L MC USA

THE THESIS that various emotional reactions and even localized body wounds evoke a generalized and fundamental hormonal metabolic response is not new but correlation of isolated observations now permits formulation of a coherent theory many parts of which are well documented

Among the first to study the reactions of the body to emotions such as fear and rage were Beaumont who observed the gastric fistula of Alexis St Martin and Pavlov who investigated the gastric pouches of his dogs Both of these observers recorded the marked effect of fear rage, and other mental states on the secretory and motile responses of the gastric mucosa Crile and Lower evolved the theory of anoci association because he believed that even under general anesthesia noxious stimuli were transmitted to the brain and even though not interpreted by the patient as pain were capable of producing shock For this reason he advocated local infiltration of an anesthetic agent in addition to general anesthesia to block such impulses Cannon correlated these observations on the interrelationship between emotion and function and propounded the theory that trauma released toxic products which caused the general body reaction which he called shock The modern concept of shock as a train of events dependent upon decreased circulating blood volume did not gain acceptance until World War II, and previous writers included a host of other states such as syncope collapse or cetera under the term shock Unless this is understood clearly it is difficult to follow the older literature Not until the work of Selye were these various observations finally explained by a cohesive theory which he called the alarm reaction According to this hypothesis rage fear and pain are capable of stimulating the adrenal medulla resulting in an outpouring of epinephrine (adrenalin) which in turn causes the hyperglycemia, peripheral vasoconstriction and oliguria that had been recognized as sequelae of trauma

NORMAL BATTLE REACTION

The point of origin of the generalized reaction is so frequently an emotional state that it seems well to describe the normal

From Brook Army Hospital Fort Sam Houston Texas

battle reaction Ranson⁵ stated that this reaction is compounded of physical fatigue fear, various psychosomatic symptoms resulting from fear, psychologic symptoms resulting from this socialization, as well as the psychic reaction to battle, including all the elements of loneliness, bodily discomfort, frustration, revulsion toward killing, et cetera. All such reactions cause over response of the autonomic nervous system and, consequently, the manifestations include muscular tension which may progress to "freezing" anorexia or nausea and vomiting, diarrhea, faintness, tremor, excessive perspiration, vague abdominal distress, tachycardia, and urinary frequency. All of these states are known in varying degrees to students before a stiff examination, to some surgeons before a difficult operation, and to others subjected to severe stress.

HORMONAL RESPONSE

Sayers⁶ showed that increased adrenocorticotrophic hormone (ACTH) liberation into the blood stream from the pituitary is stimulated by histamine epinephrine atropine, acetylcholine, cold heat, and hundreds of other agents or environmental changes. As the name implies, ACTH stimulates the adrenal cortex with results which will be shown shortly. Administration of adrenalin causes a fall in vitamin C and cholesterol content in the adrenal cortex,⁷ this being a measure of its functional activity. This complex mechanism is a continuous one operating at varying degrees according to the severity of stimuli and depending upon a host of stimuli, the limiting factor apparently being the blood level of adrenal cortical hormones because when a certain level is reached⁸ the anterior pituitary is temporarily inhibited from producing ACTH. In trauma when there is a sudden using up of the cortical hormones, there is peak stimulation of the pituitary, the adrenal cortex being able to respond only if not exhausted by continued overstimulation. Long⁹ showed that this entire train of events can be set off experimentally by stimulation of an exposed sensory nerve, exposure to 4°C temperature for one hour, simulated altitude of 20 000 feet, hemorrhage of two percent of body weight intravenous injection of killed *Escherichia coli* organisms, or scalding at 70°C for five seconds.

ADRENAL CORTICAL HORMONES

Desoxycorticosterone acetate (DOCA) induces retention of sodium with consequent excretion of potassium. Retention of sodium causes water to be held and this train of events explains why potassium must be replaced in some severe responses, why sodium chloride should be administered cautiously in the first few days after trauma and why oliguria is temporarily present. Those changes ordinarily revert to normal within three days in

patients who can take a general diet by mouth. Arbitrarily attempting to change these reactions before that time may be meddlesome.

Cortisone promotes gluconeogenesis by which tissue protein is converted directly to glucose and glycogen with concomitant excretion of the excess and liberated nitrogen in the urine. This explains the glycosuria and hyperglycemia after injury and is the mechanism for the traumatic diabetes which formerly was a confusing development. Also cortisone favors dissolution of the lymphoid elements of the blood with release of gamma globulin antibodies and similar substances concerned with immunity to bacterial infection. After a single trauma the lymphocyte count rapidly falls returning gradually to normal in 48 hours.¹⁴ This offers a practical means of measuring the effect of trauma and the bodily response and because the eosinophil count is simple this is used as the gage. After injection of ACTH the greatest eosinopenia results in from three to five hours so this fact gives a good criterion for judging adequacy of response to injury. The 17 ketosteroids are associated with nitrogen retention and therefore are anabolic for protein while cortisone is catabolic. These hormones are very similar in chemical structure to sex hormones such as testosterone and to the pituitary growth hormones. This may explain the apparently beneficial effect of testosterone administration during convalescence to hasten healing and well being.

Reasoning teleologically it seems that the purpose of the adrenomedullary anterior pituitary adrenocortical mechanism is to prepare the body to withstand trauma making the body as self sufficient as possible. The ability of muscle to contract anaerobically for a short time obviates the necessity for increased blood supply in effort, permits function even after decreased blood supply by injury and gives to a person an extra burst of speed and endurance which may be lifesaving. The quick increase of epinephrine raises the blood pressure for better cerebral function causes vasoconstriction to slow hemorrhage promotes gluconeogenesis so that the organism can survive without food intake liberates antibodies to combat potential infection retains sodium and water which together with the oliguria spares thirst, and in every way prepares the organism to lie quietly mobilizing its forces for healing and recovery.

In primitive times these mechanisms were important and lifesaving but now are less necessary because of early resuscitation and surgical treatment. Nonetheless it is imperative that these mechanisms be fully understood in order to use them to advantage without being meddlesome. Furthermore it is interesting to speculate that the alarm reaction which is apt to be chronically over

active due to the stress of modern life may actually be the cause of a number of disease entities the cause of which has been obscure

Mental stress can influence bodily function, but it is not known why different persons respond in different ways. Why does one person respond to emotional stress by gastric hyperacidity while another responds by diarrhea or high blood pressure? The answers to these questions are not yet at hand but it is conceivable that the person who develops gastric hyperacidity may be the person who develops duodenal ulcer. It is known that cortisone causes gastric hyperacidity and we know also that the person in stress is apt to eat poorly. Here we have high gastric acidity, lack of neutralization because of poor food intake, and retention of acid because of pyloric spasm. Experimentally, an ulcer can be most easily caused by hyperacidity in an empty stomach over a period of time. Patients with ulcerative colitis have psychiatric problems and usually have parents who are borderline behavior problems themselves. Is it not possible that the person who reacts to stress by diarrhea may develop ulcerative colitis if the personality and home environment are favorable to it?

Thyrotoxicosis with exophthalmos is a metabolic disease based on excessive pituitary stimulation with too much release of thyroid stimulating hormone. Such a state is not really a surgical disease and exophthalmos may progress rapidly after thyroidectomy. We operate only because we are ignorant as to a better treatment. Is it not possible that certain persons may react to stress (and thyrotoxic patients exhibit other signs of sympathetic stimulation such as excessive sweating) by too great stimulation of the pituitary gland with secondary overstimulation of the thyroid gland? It is known that epinephrine causes high blood pressure, and expressions such as "Don't get your adrenalin up" or "Don't get your blood pressure up" indicate a popular acceptance of the relationship between stress, epinephrine, and blood pressure. Organs which are chronically distended tend to develop thick walls and tend to lay down calcium. Does arteriosclerosis follow or precede hypertension? Is it not possible that arteriosclerosis is an end result rather than a cause? Is this not the rationale for adrenalectomy in malignant hypertension before irreversible changes have occurred? These are fertile fields for basic and clinical research pointing out the widespread importance of the stress reaction and the hormonal response to psychic or physical trauma.

SUMMARY

The thesis that various reactions and even localized body wounds invoke a generalized and fundamental hormonal metabolic

response has been developed with presentation of the correlated theory documented as far as possible in the light of present fragmentary evidence. The complex adrenomedullary anterior pituitary adrenocortical mechanism is always active but responds more vigorously to emotional or physical trauma setting in motion a series of events which tend to protect the organism by fundamental temporary changes in the pattern of metabolism. These changes must be understood to prevent meddling therapy and to help us realize that this alarm reaction in itself may be harmful in causing physiologic changes which we regard as a diseased state.

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ASPIRATION OF BLOOD DURING TONSILLECTOMY

It is remarkable that the lungs are seldom injured in tonsillectomy although the surgeon works at the entrance to the whole bronchial tree. In spite of great care a small amount of blood must be inhaled at every tonsillectomy. Roentgenograms have shown traces of lipiodol at the lung base when gauze wabs soaked in lipiodol have been used experimentally instead of the usual tosyl swab.

—WILLIAM M KENZIE M B

Lancet p 960 Nov 7 1953

Army aviation Finally it provides a basis for classification of the applicant as either qualified or disqualified for training in Army aviation This latter decision is essentially one of weighing the applicant's total assets against his total liabilities The ultimate purpose of the ARMA is to predict the probability of each applicant's completing aviation training, and his subsequent success in operational flying

The ARMA is based on all facts obtained from the medical psychiatric and psychologic histories from the general physical neurologic and special examinations including aptitude tests and laboratory tests such as an electroencephalogram when indicated The ARMA also indicates the applicant's zeal for flying and his maturity stability and drive in the face of the hardships and hazards of military aviation The ARMA is not strictly limited to the applicant's purely mechanical ability to operate an aircraft In the case of officer applicants qualification as an Army aviator presupposes continued active duty with increased responsibilities In the case of enlisted applicants graduation carries with it promotion to the grade of warrant officer The qualifications of the applicant to accept and perform these additional responsibilities and duties must be considered as well as his aptitude to fly an aircraft.

The majority of applicants for flying training will be found to be qualified according to the ARMA It may provide the only reason for disqualification and in such cases it will be considered as valid as disqualification for any physical defect The results of the ARMA are recorded on the Standard Form 88 (Report of Medical Examination) For recording purposes and standardization only the maximum score of 200 applies to the "perfect" applicant Few will ever attain this score The exact score is arrived at by assigning variable numerical weights to certain derogatory findings then subtracting them from the maximum value of 200 A score of 160 or over qualifies the applicant for Army aviation training a score of less than 160 disqualifies him In scoring unfavorable findings the medical examiner is afforded considerable leeway in assessing specific numerical values

Table 1 contains suggested numerical values for representative unfavorable findings The smaller figure represents the minimum which should be subtracted if that particular condition exists and the larger figure is the maximum if that unfavorable finding exists to a marked degree The score of the applicant is entered in Item 72 of the Standard Form 88 Scores are recorded as "Satisfactory ARMA" or "Unsatisfactory ARMA" followed by the numerical score If the applicant manifests two unfavorable conditions the score of which totals 40 he will be disqualified

as he cannot be assumed to be perfect in all other respects. It is advisable, however, to complete the examination as the ARMA is an evaluation of the total personality, and subsequent findings may modify earlier opinions.

TABLE 1 ARMA Suggested numerical values for unfavorable findings

Unfavorable findings	Numerical values
Nervous and mental disease in family (each instance)	0-5
Alcoholism in family (each instance)	0-5
Criminality in family (each instance)	0-5
Insomnia in applicant (persistent)	5-10
Hay fever, asthma, or other allergic phenomena	20-40
Enuresis (prolonged)	10-40
Somnambulism	20-40
Fainting (cause)	15-40
Unconsciousness (duration and cause)	10-40
Fracture of skull or severe concussion (See AR 40-110)	40
Phobias and obsessions (excessive fears)	5-40
Nail biting	10-20
Amnesia	20-40
Fits, spasms, and convulsions	20-40
Speech defects (corrected or uncorrected)	10-40
Arrests	10-40

The last value is the minimum which should be deducted from the maximum score of 200 if the condition is present. The latter value is the maximum to be subtracted if the unfavorable condition is present to a marked degree.

Work sheets, when used in performing the ARMA, are not normally attached to the report of medical examination, but specific reasons for disqualification should be entered in Item 73 of the standard form. In supporting a disqualifying ARMA, remarks which may be personally offensive to the applicant or remarks which may be controversial are not entered in the Standard Form 88 because the applicant receives a copy of all records processed. Thus, a homosexual may be described as "arrested personality development," and an intellectually inferior person as "poor achievement" et cetera. Most disqualifying ARMA's will be supported by physical evidences of instability such as a poor response to the orthostatic tolerance test. The medical examiner must exercise his judgment in assessing numerical values to conditions not listed in table 1. Evidence of marked vasomotor instability and other emotional phenomena, for example, will be given special unfavorable consideration.

Inasmuch as the flying applicant is being evaluated for a fairly specific vocation, it is mandatory that the medical examiner possess a sound basic knowledge of the specific attributes involved. In addition to basic qualifications in medicine and psychiatry, the examiner performing the ARMA should be familiar

with Army aviation its characteristics and its medical problems. It is not necessary that the examiner be a pilot but it is necessary that he realize the general and specific stresses and requirements inherent in Army aviation. Air Force experience indicates that the presence of wing insignia on the chest of the medical examiner, and all that it connotes is of value in establishing the rapport which is so essential to conducting the examination.

STRESSES OF ARMY AVIATION

Inasmuch as the applicant is being examined for a fairly specific profession it is appropriate that some consideration be given to the general and special stresses of Army aviation. It is accepted that man a terrestrial animal is subjected to certain unusual and additional stresses when piloting an aircraft. Full treatment of this subject is beyond the scope of this article. Philosophically the personality of a person contains an ego a function concerned with perceptions and their relationships to needs and the adaptability for meeting situations. This "ego" can be likened to a calculator which will fatigue or break down if (1) it receives too many strong stimuli too fast or (2) it receives too many varied stimuli and cannot cope with them. Suffice it to say that in no other field are strong varied stimuli received any more rapidly than in military aviation.

It is advantageous to compare the relative stresses of Army aviation with that of the United States Air Force. While Army aviators do not normally fly at the extreme speeds and altitudes characteristic of the Air Force Army aviators fly all the time. Complex navigational instruments are not normally provided in Army aircraft and frequently copilots are not available. The Army aviator is required to maintain continuous surveillance over his terrain his aircraft, and such instruments as are available. Further in many cases the pilot has other concurrent responsibilities such as caring for a severely wounded casualty, surveying or adjusting artillery fire observing friendly and enemy activities laying wire et cetera. The many missions of Army aviation and the uncertainty and fluidity of combat in forward areas require frequent flights in all sorts of weather under variable tactical situations and with very little rest or inactivity between missions.

Even between flights there is little abatement of stress. On the completion of fatiguing missions Army aviators are required to live under conditions characteristic of the division area. They are not rotated to quieter areas on a basis of "so many missions accomplished" but on completion of a relatively long fixed tour. This lack of complete relaxation between sorties and the presence of certain unavoidable deprivations further increases the psychologic stresses of flying.

ARMA TECHNIC

No rigid nor fixed rules can or should be prescribed for performance of the ARMA. Each medical examiner has his own technic, and each applicant is an individual. Applicants should be interviewed and examined in private. A quiet room with comfortable surroundings permits the relaxation and intimacy so essential to secure the complete confidence and co-operation of the applicant. Though material to be discussed during the interview is, by nature, confidential, it is not necessary that the examiner mention this, unless the applicant raises the issue. Writing and note taking should be minimized, as applicants who believe that everything they say is being recorded are likely to avoid certain more intimate details. Tact is important, and questions should be asked indirectly. As an example, when attempting to find out if a man uses liquor it is better to ask, "How much liquor do you use?" rather than "Do you ever take a drink?"

The ARMA should be performed after all other medical examinations and psychologic testings are completed. It is the most time consuming of all prescribed procedures, and there is little reason to accomplish the test on an applicant who is already disqualified for other reasons. Furthermore, the examiner performing the ARMA should have access to all other information contained in previous examinations. Such information provides leads and confirmation which assist in conducting the ARMA.

The individual medical examiner should prepare a work sheet to be used in conducting and recording the ARMA. The very nature of the examination defies regimentation or over standardization, but such a check list will ensure against omissions and point up more important considerations. The following general fields of the personality should be investigated as the ARMA is being accomplished: (1) family history, (2) environment, (3) morphology, (4) intelligence, (5) achievement, (6) psychomotor activity, (7) emotional content, (8) somatic demands, (9) sociability, and (10) philosophy of life. Within this framework, the examiner can prepare a check list which most adequately serves his purpose.

SUMMARY

Selection is the first logical step in the training of Army aviators. Among the more important considerations in the medical examination of applicants for Army aviation training is the "Adaptability Rating for Military Aeronautics" (ARMA). The ARMA permits an evaluation of the applicant's total personality as it relates to the specific stresses of Army aviation. It provides a basis for accurately predicting the probability of an applicant's completing the training for which he has applied, and his subsequent success in operational flying. The ARMA

is based on all facts obtained in the medical, psychiatric and psychologic histories the general physical neurologic and special examinations and various aptitude tests Special consideration is given to the applicant's zeal for flying his maturity and his stability and drive in the face of hardship His aptitude of the additional nonflying responsibilities incumbent on an Army aviator is also evaluated General mention is made of the specific stresses of Army aviation and suggestions as to conducting and scoring the ARMA are presented Proper performance of the ARMA will reduce the attrition during training and subsequent operational flying promotes economy and improves flying safety

THE DIFFICULT PHYSICIAN

The physician who is intolerant of or personally disturbed by emotional interplay inadvertently imposes great burden on his patients He wrongly assumes that everyone is possessed of an equal capacity for handling tension and acts accordingly He is facetious under the guise of being honest and direct He sees little need for the preparation of patients for disturbing news He gives prognostication and diagnoses to all patients indiscriminately forgetting that one man may be a poison His presence suppresses the free expression of feeling and when his patient unfortunately yields to the temptation the physician lectures him on the benefits of maintaining stoical attitude He sneers again at what he calls the patient's weakness by recounting in detail the much worse plight of other patients

The opposite sort is typified by the physician who infantilizes his patients By suggestion and prescription he fosters their dependence Bed rest vacations and repeated admonitions to take it easy are ordered per se Hormones vitamins and tonics are the agents with which he implements the bold suggestion that the patient's endocrine glands his diet or his energy reserves are somehow or other deficient and need to be supplemented periodically

—HOWARD P. ROME, M.D.

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A FIELD SERVICE PROGRAM IN MILITARY MENTAL HYGIENE

CLAY F. BARRITT *Captain MC, USA*
RICHARD P. KERN *First Lieutenant, MSC USA*

THE USEFULNESS of a mental hygiene consultation service in a basic training center largely depends on the working relationship and availability of psychiatric personnel to the various unit officers and cadre. This report summarizes the experiences of the staff of the consultation service at a medical training center as they attempted to develop this relationship and increase the availability of consultations.

Prior to the introduction of a Field Service Program, the mental hygiene consultation service was operating in a manner similar to that of other consultation services in basic training centers. At Camp Pickett, Va., it was located with the training units in a cantonment type of building. It was adequately staffed with three psychiatrists, a social work officer, a clinical psychologist and several psychiatric social work and psychology technicians. Adjustment problems occurring among basic trainees were referred by company commanders, dispensary physicians, chaplains, and Red Cross personnel. Social histories, collateral information, psychiatric interviews, and, when necessary, psychologic testing were completed. A superficial and supportive approach was used in treating those soldiers who could continue their basic training. Trainees unable to cope with the stresses of Army life were hospitalized when necessary or recommended for separation from the service under appropriate administrative regulations.

After the staff had worked together for several months many deficiencies, particularly in the field of preventive psychiatry, became noticeable. For the most part only those persons who were severely disturbed or who presented marked adjustment problems were referred to the consultation service. By this time motivation for further duty was at a low ebb. The delay in the referral of persons with correctible maladjustments rendered some of them unsuitable for rehabilitation to the Army.

Deficiencies were also noted in the operating procedure within the consultation service itself. Trainees referred to the consul

From Brooke Army Medical Center, Fort Sam Houston, Texas. Dr. Barritt is now at Chestnut Lodge Sanatorium, Rockville, Md.

tation service were taken from their unit settings and treated in a clinical atmosphere. This setting tended to produce an artificial environment which obstructed proper readjustment of the trainee. While efforts were made to reduce this factor by eliminating medical attire and using the title Consultation Service, a psychiatrist is still a doctor to trainees. With certain trainees whose adjustment largely depends upon firm but understanding leadership, referral to a medical facility will encourage sufficient secondary gain to complicate effective management. Psychiatric evaluations and recommendations to company commanders reflected a lack of awareness of important problems present within these field units. Clearly, it was necessary to direct efforts toward providing the company cadre with a better understanding of the trainee as they could apply more firm understanding leadership.

An early effort to correct these inadequacies was the assignment of a psychiatrist to each training regiment. While this helped the need to direct more intensive efforts toward the training companies became evident. To meet this need, the present project referred to as the Field Service Program was suggested to the commanding general of the medical training center. This project consisted of assigning social work technicians (referred to as unit field workers) from the consultation service to various training units in the medical replacement training center.

PURPOSE OF THE PROJECT

The purpose of the project was to observe the effect of greater availability of psychiatric personnel to units in training. The major objectives of this project were as follows:

1. The orientation of unit cadre to psychiatric service in the training center and the resolution of their personal resistances to these services.
2. The education of unit cadre in the recognition of adjustment problems among trainees.
3. The early detection of adjustment problems among trainees and when necessary the referral to the mental hygiene consultation service.
4. The detection of adjustment problems occurring among trainees not usually referred by unit cadre to the consultation service.
5. The management of adjustment problems among trainees within the training unit by the unit field workers.
6. The understanding of problems due to the training process and affecting adjustment to basic training.

ADMINISTRATIVE METHOD

The project was placed in operation in the Medical Replacement Training Center, Camp Pickett, Va., in January 1954. At that time

both infantry basic training (first eight weeks) and medical basic training (second eight weeks) were being conducted. Early observations indicated that a company was too small a unit to require the full time services of a unit field worker. A training battalion (four companies) was finally selected as representing the most appropriate strength to be served by each unit field worker. In February 1954 the Medical Replacement Training Center was transferred to this medical center, with many of the cadre personnel, including the staff of the consultation service. With a smaller trainee strength and the elimination of the first eight-week cycle of infantry basic training, only three unit field workers were required. One worker was attached to each of the three training battalions. One of these men also worked with two special training companies which provided infantry basic training for conscientious objectors. It was proposed to gather observations during two training cycles (eight weeks each) before a summary evaluation of the project was made.

The unit field workers were attached to the various battalions for quarters and rations. Each had a cadre room supplied with a desk and two chairs in one of the companies for the purpose of interviewing. The assignment of these workers and their duty hours with the units was determined by the chief of the consultation service to whom they were directly responsible.

The field workers lived in the battalion enlisted quarters. They were expected to conform with battalion standing operating procedure on such matters as reveille, mess, and uniform regulations. They were, above all, not to be conspicuous as privileged persons.

Referrals were made to the unit field worker through the company commander. Each man referred from a company was interviewed by the unit field worker, who recorded the initial history. The unit field worker served as a screening agent, and referred to the consultation service only those persons who needed a more thorough evaluation. Those persons not referred to the consultation service were observed in training, and appropriate recommendations were made to the company commander and enlisted cadre for their management.

Records of the Unit Field Worker. After the unit field worker completed the initial history on each person referred to him, it was read by the chief of the consultation service, who in this way supervised the management of all referrals. It then became a permanent part of the consultation service records.

Collateral information and progress notes on trainees were recorded, submitted, and filed with the consultation service.

their poor adjustment been noted earlier and their referral been made promptly. Several changes occurred after the project was initiated which undoubtedly have influenced this problem. This medical training center receives trainees who have completed their first eight weeks of infantry basic training. Thus some screening had already been done. Furthermore trainees here are under observation for at most eight weeks. Many trainees stay for only two weeks of training after which they are assigned elsewhere. Present observations indicate that no essential change occurred in the area of early detection of adjustment problems. It is the cadre who carry the main responsibility for the detection of adjustment problems. Though the idea that the worker could identify trainees who should be referred by watching them in classes et cetera seemed promising it has not proved to be of practical importance. In practice this requires a closer knowledge of the trainees than a unit field worker can possibly attain. To carry out such a plan would require more workers and would interfere with the platoon sergeant's position and responsibilities toward the trainees. The emphasis therefore was shifted to the unit field worker helping the platoon sergeant perform his functions more effectively.

Screening of Referrals. About 138 trainees with adjustment problems were referred to the unit field workers. One third of these troops were managed by the unit field worker in the training unit under the supervision of the chief of the consultation service. The other two thirds were sent to the consultation service. This preliminary screening permitted the clinic staff additional time in the evaluation of the more severe problems.

TYPES OF ADJUSTMENT PROBLEMS

Though the main responsibility for the detection of adjustment problems among trainees rested on the cadre, the presence of a unit field worker in the training unit did stimulate earlier referral as well as referral of trainees who otherwise might not have been referred. Prior to the field service program many cadre men regarded the referral of trainees to the mental hygiene consultation service as a last ditch measure. Company cadre often desire immediate and concrete recommendations from psychiatrists following their referral of a problem trainee. With the conventional clinic operating procedure it was not unusual for a week or more to elapse before a company commander received a psychiatrist's report when the monthly case load varied between 100 and 200. Frequently this report was of little help to the company commander. Furthermore these recommendations did not always reach the enlisted cadre who were intimately concerned with the management of the trainee. Thus resistances to the referral of trainees resulted not only from the social stigma but also the failure

of the consultation service to offer prompt and practical aid to company cadre

The presence of the unit field worker enabled him to deal more successfully with both of those issues. As he gained a better understanding of company policies and developed a working relationship with company cadre he became more useful to the unit. He was often able to give concrete suggestions concerning the management of a trainee. Men with minor types of adjustment problems were referred more readily. Such referrals included men who apparently were not profiting from training, men applying for hardship discharges, men observed to exhibit unusual anxiety when faced by persons in authority, and men who were incipient disciplinary problems.

MANAGEMENT OF ADJUSTMENT PROBLEMS

The opportunity for the unit field worker to interpret the behavior of a trainee to a cadre man and give suggestions in the management of the adjustment problems is regarded as his most important contribution to the management of men within the unit. This point represents a shift of emphasis comparable to that discussed in connection with detection of adjustment problems. In other words, although the treatment of the individual trainee is important, the worker's role of technical advisor to the individual cadre man who deals with many trainees appears more promising.

UNDERSTANDING OF ADJUSTMENT PROBLEMS

Through frequent contacts with unit cadre the unit field worker acquired a more realistic understanding of unit problems. This orientation was primarily useful in evaluating and managing adjustment problems among trainees and in overcoming the personal resistances of cadre men.

REACTIONS OF UNIT CADRE

The following data concerns the responses to a questionnaire from the company commanders, first sergeants, operation sergeants, and platoon sergeants because they were in closest command contact with the trainees. These groups formed a combined group of 79 men, collectively referred to as the leadership cadre.

The first item of interest was the extent to which the leadership cadre's responses reflected both an awareness of the unit field worker's presence and a basic, if limited, understanding of his function in the unit. Sixty-one percent of the leadership cadre indicated an awareness of these two points. Two factors—distribution of contacts and number of companies per unit field worker—appeared to be primarily responsible for the lack of awareness among some personnel. Many platoon and operation sergeants were aware of the worker's presence but had not yet become familiar

with his functions. Relatively little time, however, had as yet been spent with the individual platoon and operation sergeants. The responses also revealed that one worker had been assigned too many companies, a total of six. As a consequence, 56 percent of the leadership cadre in four of these companies were not even aware of his presence. The other two workers were assigned only four companies each, and in each case only 10 percent of the cadre were unaware of the presence of their respective unit field workers.

Further comments on other aspects of the program were made by those cadre men who were fully aware of the program (program oriented group). It is interesting to contrast their responses with those of the unsatisfactorily oriented cadre (nonprogram oriented group).

Need for Unit Field Worker. Among the program oriented group, 91 percent indicated a need for a unit field worker, and 75 percent reported that the worker had been of assistance to them in managing problem trainees. These figures compare with 48 percent and 33 percent respectively in the group not program oriented.

Educative Role of Unit Field Worker. It was thought by the staff of the consultation service that the cadre men's reasons for referring some of the trainees (in effect, psychiatric screening) reflected rather vague ideas of what constituted an adjustment problem. Consequently, the orientation of cadre was anticipated by product of the field service program. Sixty-five percent of the program-oriented group, as compared to only 39 percent of the group not program oriented, believed they had learned to recognize adjustment problems better as a result of the worker's presence. However, 77 percent of the program oriented group denied that their ideas concerning the types of problems to be referred to the unit field worker had changed. Slightly over one half of the group not program oriented indicated "no opinion" in this respect. It would appear then that the program oriented group saw no need for a change in its referral policy. Any change which might take place would be in terms of more discriminating detection and prompter referral of men with the similar types of adjustment problems as formerly. It was also noteworthy that the increase in symptom sophistication among the program oriented group tended to be reported by the field cadre (72 percent) rather than by the commanding officers and first sergeants (53 percent).

Confidence in Unit Field Worker. Among the program oriented group, 56 percent indicated confidence in the worker's ability to avoid the pitfall of allowing trainees to pull the wool over his eyes. This particular phraseology was chosen because it was frequently used by those cadre men who showed considerable resistance to psychiatric services and/or the unit field worker.

Twenty seven percent of the program oriented group indicated ambivalence on this question. The comparable figures for the group not program oriented were 26 percent and 35 percent respectively.

COMMENTS

It was unanimously agreed that field contacts made by psychiatric social work technicians were invaluable. Perhaps some psychiatric social work technicians would be initially repelled by the prospect of activities which may appear to offer little personal gain for a large expenditure of time. While such feelings were present at the initiation of the program it is now difficult for the social work technicians who participated to understand how they were ever satisfied with their previous role in the clinic setting. Perhaps many psychiatric social work supervisors and psychiatrists will see in this program a decentralization of supervision and a subsequent loss of control over their personnel. In operation, however, the supervision of the field workers by the chief of the consultation service presented no unique problems. The basis for supervisory activities which exists in the conventional clinic setting was present in an identical form during the operation of this program. The necessary qualifications for a unit field worker are no different from those for any proficient social work technician. Each of the men used in the program was a capable technician, enthusiastic about succeeding in his new role, conscientious in the performance of his duties, and willing to accept his limitations. He was given ample opportunity to discuss with the field psychiatrist and other staff members of the consultation service any professional and interpersonal problems arising within the units. A unit field worker was never forced to accept responsibilities which he and the field psychiatrist thought he could not handle.

Initially, unit commands may think that such a program is an attempt to cut into their authoritative role over trainees. That this attitude can be managed with a reasonable degree of success in a relatively short period of time has been indicated.

Reservations such as those mentioned above are in some respects healthy ones because the role of the unit field worker is a new one and experience has not been sufficient to completely evaluate it. However, the role appears to offer to consultation services an opportunity to increase the usefulness as well as the quality of their social work. Conventional areas of functioning, such as the gathering of collateral information and the referral of men for re evaluation of psychiatric profiles, are carried out with greatly increased efficiency. The improvement in the scope and general quality of the collateral information itself is sufficient to justify the unit field worker's role.

It has been our experience that to obtain adequate information concerning a trainee's behavior and to realistically evaluate it once it is obtained, the clinic cannot function with the detachment of a hospital outpatient service. Rather it must function more as an integral part of the organization which it serves. The further removed clinic personnel are, due to administrative considerations the less is the possibility of establishing effective relationships with unit command. If unit cadre harbor prejudices and misconceptions concerning psychiatric services these resistances cannot be adequately managed through periodic lectures, sporadic telephone conversations or occasional informal talks. It is our conviction that the concept of military social work as field work must be developed. Only then can a consultation service work more effectively with the command in carrying out the preventive functions of its over all mission as well as treatment and disposition.

SUMMARY

The purpose of developing a psychiatric field service program conducted by the mental hygiene consultation service was to make the services of psychiatric personnel more readily available to unit command and to bring about increased understanding concerning the proper use of these services. The essential feature of this method consisted of attaching a social work technician referred to as a unit field worker to each training battalion. These unit field workers under the supervision of the chief of the consultation service worked directly with the training companies in their respective battalions.

The impressions of the unit field workers concerning six areas of previously deficient functioning were summarized from their daily logs. A questionnaire administered at the end of the trial period provided some indication of the unit cadre's reactions to the program. The major advantages offered by this program consisted of (1) Establishment of a closer working relationship with all levels of command and particularly the company cadre (2) marked improvement in collateral information on men referred to the service (3) more realistic psychiatric recommendations through increased acquaintanceship with unit problems and unit personnel and (4) a more effective program of preventive psychiatry by making it possible to assist unit cadre in managing within the unit trainees exhibiting the less severe or potential maladjustment problems. By this means it was believed that the necessity for later, more involved psychiatric treatment tended to be obviated.

THE BABYLONIAN CADUCEUS

FIELDING H. GARRISON *Lieutenant Colonel MC USA*

ON THE title pages of books published by one of the great medical printers of the sixteenth century, Johann Froben (1460-1527) of Basel, we frequently see a device which the uniform of our Medical Corps has rendered familiar, namely, the caduceus with the entwined serpents. In the case of Froben's device, the caduceus is not winged but surmounted by a dove, and, in the complete emblem, there was a Greek inscription which read "Be ye therefore wise as serpents and harmless as doves." This is perhaps the first instance in which the *kerykeion* or caduceus of Mercury is associated with medicine. Just a little later, Sir William Butts (1545), physician to Henry VIII, was the first medical man to employ the caduceus in his crest.¹ About the middle of the nineteenth century (1844), another firm of medical publishers, J. S. M. Churchill of London, began to employ the caduceus on its title pages. A little later in 1856, the caduceus appears on the chevrons of hospital stewards in the U. S. Army. For a long period it has been part of the insignia of officers of the Public Health Service. It is not until 1902 that it is first seen on the uniforms of medical officers of the U. S. Army.² As the Hermes of Greek mythology was variously the god of fertility, the messenger of the gods, the conductor of souls to Hades, the god of commerce, merchants, and thieves it has been sometimes argued that the symbolism of the caduceus is not strictly medical and that it should be replaced by the Aesculapian staff with a single serpent which is, in effect, the collar ornament of the Royal Army Medical Corps.³ But recent investigations on the pre-history of the caduceus by A. L. Frothingham indicate that

R. p. t. d. f. m. *The Military Surgeon*, vol. 44, pp. 633-634, May 1919, with the kind permission of Colonel Robert E. B. USA (R. t.) Editor, *Military Medicine* (formerly *The Military Surgeon*)

C. l. l. Garr. m. t. Am. med. l. h. to. d. ed. 1935. He was the author of *An Introduction to the History of Medicine* and of the *Index Medicus*. Surgeon General L. B. Ry from 1912-1927. Director of the War Medical Library. J. H. H. p. k. U. S. Army. S. h. l. f. m. d. in.

Clippings. S. D. H. l. d. r. y. d. M. d. i. t. *Antiquary*. L. d. n. 1915. n. 415. Clippings. t. tha. h. cad. us. l. occur in the m. of S. W. l. m. B. d. be. t. Sur. J. m. Bur. w. S. L. ud. r. B. unt. S. Ruckman. God. l. e. nd. L. rd. J. k. ton. l. m. d. i. c. l. m. n.

McCulloch. C. C. *Military Surgeon*, 1917. xl. 143.

² McCulloch. op. cit. 143.

F. th. gh. m. A. L. B. bylo. n. ga. f. l. l. r. me. th. snake-god. d. of. th. Cad. us. *Am. J. Archaeol.* C. cord. N. H. 1916. 175-211.

it had its origins in civilizations much earlier than the Greek and that in the first instance it symbolized certain vague groups of mystic or magic processes which in the cult of prehistoric man were anterior to medicine in our sense but certainly inclusive of it



Caduceus on a Babylon vase the L
(4000-3000 B C)

Archaeologists have found that Hermes was originally a pre Olympian deity of Babylonian extraction and that this prototype was invariably a snake-god who as the deity of springtime and of fertility appeared in the guise of a double snake male and female Now in the most ancient cults the snake was always the symbol not merely of medicine but also of those mystic and magic processes which included it and of which the power of conferring fertility potency or fecundity was one of the most awe-inspiring In the earlier Babylonian and Hittite figurations the caduceus is not an emblem but a god in itself in others it is carried in the hand of gods or goddesses as a sign and symbol of supernatural power

Diagnosis : not the end but the beginning of practice
—M r n T F i c h e r



Clinicopathologic Conference

U S Air Force Hospital Parks Air Force Base Calif *

MASS IN THE CHEST

Summary of Clinical History A 24 year old man was admitted to the hospital on 4 May 1954 because a roentgenogram of the chest taken on separation from the service showed a mass posteriorly in the base of the right hemithorax. The patient had been completely asymptomatic. He had been in the Air Force for two and one half years and had been stationed in Texas and Korea. His home was in Texas. His past history was unrevealing except for measles while in the service and an episode of "flu" lasting seven days while in Texas, four years prior to admission.

Physical Examination The patient was a well developed, well nourished, white man in no distress. Blood pressure was 110/70 mm Hg, and findings of the remainder of the examination were within normal limits.

Laboratory Studies The white blood cell count was 11,050 per cu mm with 61 percent neutrophils and 39 percent lymphocytes. Hemoglobin was 14.5 grams per 100 ml. Erythrocyte sedimentation rate was 18 mm per hr (Wintrobe) and hematocrit was 48. Urinalysis showed an acid reaction, specific gravity of 1.020, no albumin or sugar, and a normal urinary sediment.

Course in Hospital The skin test for histoplasmosis was positive and the tuberculin (intermediate PPD) and coccidioidin (1:10) skin tests were negative. Complement fixation tests were negative for histoplasmosis, blastomycosis, and coccidioidomycosis, and the agglutination test was negative for histoplasmosis. Posteroanterior and lateral roentgenograms of the chest showed a peculiar rounded density at the base of the right lung, far posteriorly, in the paravertebral position. This shadow was concealed by the diaphragm and presented no distinguishing characteristics. There were coarse bronchovascular markings in the

Col Frank H. Lee USAF (MC) Commander, Fifth Laboratory Service
D. I. G. Johnston USAF (MC) Chief

right lower lobe and several small nodules above the diaphragm. There also were slight pectus excavatus, minimal end plate irregularity and flattening of the midthoracic vertebral bodies.

Additional roentgenograms showed that there were three discrete nodular masses at the base of the right lung. The largest of these lay in the posterior costophrenic sulcus in the paravertebral position. It was about 5 cm. in diameter and contained tiny calcifications which were invisible on the routine chest roentgenograms but were clearly seen on several abdominal films. The smaller ones were spherical, about 2.5 cm. in diameter and of uniform density. In the adjacent lung parenchyma there were scattered calcification and fibrotic stranding. Plain films were done in the frontal and sagittal planes through the lesion but they did not add further information.

The patient was presented to the chest conference and it was decided that bronchoscopy and exploratory thoracotomy should be performed. Bronchoscopy was omitted. On 25 May 1954 the right thorax was explored. The patient did well except for the development of a temporary postoperative pneumothorax which disappeared spontaneously. On 23 July the patient went on convalescent leave for 30 days and on his return chest films showed no remaining air in the right side of the thorax and only the usual postoperative changes in the right base. The patient was discharged to duty.

DISCUSSION

Dr. S. M. B. Cause this case is to be presented in the *U S Armed Forces Medical Journal* and because it was picked out as a discussion for my maiden trial as a consultant here. I would be quite positive that any relationship between my diagnosis and what the patient actually has is going to be purely coincidental. However, these exercises are always fun and in many ways very instructive. You can always take a case like this and hang a little story on it which may help all of us, even though I and perhaps even the surgeons before operation did not make the correct diagnosis.

There are several things that interested me as I read through this protocol. First, there is no mention made of a chest film at induction and I bring that up because if there had been one and if it had been reported as negative perhaps it would throw a little different light on what we are dealing with when contrasted with the possibility that no induction film was made. If the latter is the case we are merely presented with a static situation not knowing how long the shadow in the chest has persisted. I am not well enough acquainted with Texas (the patient's home state) to know whether any esoteric diseases develop down there. By the same token I do not know what one might

Dr. Paul Samson, Associate Clinical Professor of Surgery, Stanford University, Palo Alto, Calif.

pick up in Korea or whether this may be something we might expect in civilian life as well as in military life

The past history does not seem to bring up anything startling. I know of no connection between measles and shadows in the chest. The physical examination as you might imagine is also completely inconclusive. One might point out that either a low grade inflammation or a tumor could give some elevation in the leukocyte count and in the sedimentation rate. The differential count does not show anything that would give us a lead. Now let us consider the complement fixations and skin tests. Everything was negative as far as the complement fixation was concerned. We did however have a skin test positive for histoplasmosis only the PPD and the coccidioidin tests both being negative.

Of course we get down to the kernel of this thing when we start to discuss the x rays. As I read this over I would like to read the findings for emphasis. "A peculiar rounded density at the base of the right lung far posteriorly in the paravertebral position. This shadow was partially concealed by the diaphragm and apart from the presence of coarse bronchovascular markings in the right lower lobe there were no other characteristics. There were also two or three smaller nodules above the diaphragm. The first question in such a situation is whether or not we can say with any assurance that this mass is in the lung in the mediastinum or in the chest wall and I don't think that we can tell from the description which area we are dealing with. Perhaps if I look at the x rays I can't tell either.

Doctor Hanson: In the posteroanterior chest film (fig 1) you can see the arrow pointing to several discrete nodules containing calcification and on the film taken after pneumoperitoneum was induced there is no subdiaphragmatic element. On the lateral view the lesion is far posterior.

Doctor Samson: I think it would be interesting to point out and I asked the x ray staff before the conference started whether or not the larger lower shadow (which is quite obvious to us now) was actually seen on the chest film prior to the time that the shadow was brought out on a Bucky film of the abdomen (fig 2). I am quite sure that I could miss it easily. My attention would be drawn to the two or three small nodular shadows above the level of the diaphragm and I think you could miss the lower one partially obscured by abdominal organs. On the other hand when you see a heavy film the shadow is so very obvious that you go back to the chest film and say "Of course it's there." You take ordinary frontal and lateral films and you look at them very carefully. If you are lucky you will have your attention drawn to something like this and then of course the other studies that are of great importance are shown here. Bucky or rib detail films with or without the induction of pneumothorax or pneumoperitoneum help us

outline this type of lesion I still am not sure whether the shadow is actually under the diaphragm or over the diaphragm and nobody has told me. Perhaps I'm not supposed to know but in this particular posteroanterior view it seems very definitely to be under the diaphragm. Do we have a lateral film at the time pneumoperitoneum was present? That probably would give us the answer to whether the lower shadow has anything to do with the others. I'm not at all sure we do not have a couple of red herrings.



Fig. 1. Posteroanterior and lateral views of the chest.

Here is the situation then there are several nodules of varying sizes say two of these which might very well be in the lung parenchyma and third much larger shadow with little scattered areas of calcification that may or may not be within the lung or may or may not be within the thoracic cavity if you use the diaphragm as the boundary of the chest.

Dr. Hill: All the above at the time pneumoperitoneum was induced is not available but the description of the x-ray report is that these nodules were all supra diaphragmatic.

Doctor Samson Supradiaphragmatic? That's nice to know I'm not sure it helps us any

Doctor Harrison We also have posteroanterior and lateral planigrams (fig 3) I think you can see the very large shadow with two rather smaller shadows and linear shadows extending in the direction of the



Figure 2 Posteroanterior roentgenogram of abdomen made during the gastrointestinal series. Arrows outline large round mass containing flecks of calcium.

diaphragm with dense stippling. This might suggest to you a granulomatous lesion undergoing calcification and associated with parenchymal scarring.

Doctor Samson The thing that bothers me about the lower shadow is that it looks spherical on all the posteroanterior views that we see but not on the lateral films. This is the problem. One can indulge in flights of fancy as to what these shadows might be. I think we can first talk about other possible diagnostic steps. I notice that bronchos-

copy was advised. My only comment on that would be that I would think that broncho copy had little chance of showing anything in this particular situation. Had I explored this particular patient I would have done a bronchoscopy but I would have done it as merely incident to the thoracotomy after induction but before an intratracheal tube was inserted.



Figure 3 Late al p l a i g r a m / t h r i g h t s i d e o f t h e c h e s t

The streaking in the cardiophrenic angle must make one suspicious of some chronic inflammatory change in the lung entirely aside from these nodules. One would say therefore if this may be a bronchiectasis and if a bronchogram may not be advisable. Then at operation one can go in and under certain circumstances enucleate the nodules from normal lung tissue. But if those nodules happen to be part and parcel of a bronchiectasis even though it is asymptomatic one would be better advised urgently to take the entire lobe out. A bronchogram was not done and I'm not so sure that I would have done it either because of the fact that this boy had no history of any type of chronic cough or repeated colds or anything else that would lead you to believe that he should have bronchiectasis.

I don't see anything in this case that would particularly make me wonder about an arteriovenous fistula. The shadow of an arteriovenous fistula are present. We do know that some patients have no

symptoms whatsoever particularly if the fistula is small and single. Other patients have cyanosis, dyspnea, clubbing and polycythemia. It should be remembered that when an arteriovenous fistula is in the lung the heart is usually of normal size or is enlarged very little, whereas a peripheral arteriovenous fistula if it is symptomatic at all is always associated with some enlargement of the heart. I mention arteriovenous fistula merely in passing. If one did consider it the best thing to do would be an angiocardioqram with particular attention to getting a number of spot films to determine whether or not there was an abnormal filling of the left side of the heart associated with opacification of these shadows.

That leads us up to the point of performing an exploratory operation. What are the reasons for doing this? The main reason is the knowledge that we cannot be sure that any lesion we have seen is not a malignant lesion. If you read the literature you will realize that the percentage of malignancy varies considerably depending on the selectivity of the patients that are being studied. About a year ago Storey and associates¹ reviewed from 10 reports about 400 operated cases of so called coin lesions (which is what we are talking about here) and in that over all group 30 percent were malignant. But the percentage varied from about 17 percent in an article by Effler and associates² (which dealt primarily with young military men in wartime situation) to 55 percent found in general thoracic practice (Davis and Klepser³). So one can say that on the average about 25 percent of these lesions are likely to prove malignant if you take them from all situations in practice: young, old, males, females, et cetera. If you took them all at this hospital the percentage of malignancy would be much less because I think probably the bulk of your patients are young military personnel.

Secondly, if these lesions are not carcinomas of some kind, either metastatic or primary, then they most frequently fall into that great group of granulomas. I use the word granuloma because we know very well as we have more experience that many of these lesions are not tuberculomas. Many that were called tuberculous in the past are not. Some of them are due to histoplasmosis. Some of them, especially on the West Coast, are due to coccidioid infection and perhaps some to blastomycosis. There apparently is scattered calcification in or around these nodules and we are frequently asked "doesn't that mean that we are never dealing with a malignancy?" The answer of course is that even in patients with calcification malignancy is not completely ruled out. You can either have a coincidental carcinoma which actually is not a pathologic rarity or there can be a little calcification in a malignancy. Therefore we have not completely ruled out malignancy in this patient. The fact that three nodules are present is against this disease being a neoplasm and is in favor of some type of granuloma. My preoperative impression would be that these masses in the lung are probably granulomas of some kind. I cannot get any closer and it is up to the pathology department to do the proper tests to tell

if it is tuberculosis blastomycosis coccidioidomycosis histoplasmosis or what not

The lower shadow still bothers me and I can't explain it I thought about it as I was talking here and hoped that I would get a special leer from someone that would give me a lead as to what this might be but everybody sits there leering right back at me so I don't know I think the thing that bothers me about it is that I can see it so well in the postero anterior projection and I can't see it in the lateral film If you tell me it presumably is above the diaphragm then I still have trouble because I can't see above the diaphragm too well on any of these lateral films In that position you can have all sorts of possible lesions which might or might not connect with these nodules in the lung It could be a vascular shadow certainly I was assured that it had nothing to do with the esophagus

On the other hand it could be what is called an enteric cyst some of which are actually attached to the esophagus and some of which are not and again I don't know any way of telling any more about it than that I think I'll just have to pass that by saying that I am worried about the diagnosis and particularly worried as to whether there are two separate entities or whether they are all tied up together I think that certainly I would explore this boy and be prepared I do hope to deal with whatever I found Of course from a low posterior approach in a situation like this one is able to go above or below the diaphragm with equal facility If there is mass immediately below the diaphragm and posteriorly one thinks of course of possible kidney and adrenal lesions but these are very easily approached through the diaphragm Actually it would be the best approach to the kidney and particularly to the adrenal The adrenal is closer to the surface through the diaphragm and tenth rib posteriorly than any other place That is the quickest way to get the adrenal out

There is one more important point I would like to emphasize before I close this discussion and that is we do not do extensive lung resection until we have an undoubted diagnosis under the microscope I think all chest surgeons who are worthy of their salt know that today I don't have to tell Doctor Bergmann or Doctor Breckler about that because they know it On the other hand there are a number of people doing chest operations rather casually who technically may be able to do a good lobectomy but they too must remember that they cannot go in with a presumed diagnosis of cancer of the lung take out the lung and find an infarct or foreign body or something else Actually I am just mentioning instances that I know recently have happened It is our unvarying rule that unless we have an undoubted diagnosis under the microscope we resect the smallest amount of lung possible until we know what we are dealing with I think it is actually very bad practice these days to operate on the assumption that one is dealing with a carcinoma do a pneumonectomy and then find out the pneumonectomy was not necessary There are not a few people who have

succumbed because of that and there are not a few more who are pulmonary cripples instead of having had a curative operation

Doctor Johnston There are thoracic surgeons in the audience and I would like to stimulate some discussion Doctor Hoffman?

Doctor Hoffman This is a real problem. Although the man does not have bronchorrhea the possibility of pulmonary adenomatosis might be considered He is a young fellow but this is a possibility In the paravertebral gutter neurofibromas are possibilities

Doctor Johnston Doctor Breckler?

Doctor Breckle I m going to stick my neck way out I ll very briefly eliminate neoplasm on the basis of the patient s age and eliminate granuloma for two reasons I think that granulomatous lesions are so common that we wouldn t be seeing one in a clinicopathologic conference and second of all it is rather an unusual thing to see a configuration of three granulomas of this size in the position that they are in although I am sure they can exist So I am going to advance a new diagnosis I think that these are cystic structures and I think that because they are not filled with air or show any evidence of a fluid level we can assume therefore that they are not connected to a bronchus Therefore one must hypothesize that they are cystic masses pinched off at some time in the embryologic development of the lung In this position the most logical thing to me at least would be a so called sequestration of the lung in which for some embryologic reason the bronchi lose their communication with the lung substance and nothing is left but a group of cystic structures which become filled with fluid and which incidentally have as a blood supply arterial branches directly from the aorta So because of the position because of the patient s age and because of the fact that these are spherical densities I am going to call this a sequestration

Doctor Johnston Thank you Are there any other comments?

Doct Steggall What about the induction film?

D ct r Weiss We have no information about it

Dr Samson s diagnosis
Granuloma of lung

Docto J hnston Are there any other questions or comments?

Doctor Bergmann, you were one of the surgeons on the case Would you describe what you found at operation?

Docto B gmann I might say that we did not make a diagnosis on the case preoperatively At operation we found dense adhesions

Capt Milton C. H. Limso USAF (MC) Asst Asst Chief of Orthopedic Service

Capt. Irvin G. A. B. Clark USAF (MC) Asst Asst Chief Thoracic Surgery

Capt. Cl. T. Steggall USAF (MC) Chief Orthopedic Service

Capt. William Weiss USAF (MC) Chief Pulmonary Disease Service

Capt. Martin Bergmann USAF (MC) Chief Thoracic Surgery

surrounding the lower lobe and when these were severed there was a cystic structure deep in the posterior sulcus which was about 5 cm in diameter. It was thin walled and appeared to have no connection with the remainder of the lower lobe. This cyst was removed by sharp dissection without coming across any grossly appreciable blood supply. After we had done that we thought maybe we could let it go at that in line with what Doctor Samson said about conservation of pulmonary tissue but we could feel the discrete masses plus much more surrounding induration in the lower lobe than the film would lead one to believe. We decided that we could not do an enucleation or local resection and that a lobectomy was the only procedure that was feasible. This was accordingly done. In the course of the lobectomy as the inferior pulmonary ligament was divided a large artery was encountered and ligated.

D t J h t Doctor Samson would you like to comment before the pathologic demonstration?

D to S m We have run into abnormal blood supply several times before it was ever described as sequestration always in a situation where there was obvious infection or cystic disease. I have never seen it actually in this sort of a business where the cysts were closed off. We have I think six times run into an anomalous blood vessel a couple of times unexpectedly but always in a situation where we operated for chronic suppuration of the lung. When the lobe was out we found each time there was cystic disease quite obviously congenital with secondary infection. The reason these patients were operated upon as adults is that somewhere along the line they developed infection in the cyst and once they develop infection in a cystic structure or cystic bronchiectasis they never quite get rid of it. Antibiotics will knock it down but it will keep going until such time as the lesion is removed. While I have read of it in the present case it is in my personal experience and I am not surprised that you took out two lesions because it looks like two shadows on the x ray. I think it is always difficult to say that there are two sorts of situations and I presume the lower mass was a pleural affair completely separate from the lung if I understood you.

D t B gm No we could not be sure.

D t S m Was it a cyst?

Doct B gm It was a cystic lesion and we did not know whether we were following an anatomic line in its removal.

D t S m You took that out before you did the lobectomy?

D t B gm Yes. It was adherent to the lung.

D t S m Well it is hard to say and I think that from the plain gram you would suspect some sort of a chronic inflammatory disease. This sort of streaking usually means increased fibrous tissue in the

lung It is new in my experience that you would have an abnormal blood supply with sequestration as it has been called in the face of closed off cysts. Those of you who have never cut across one of those anomalous vessels without knowing it until after it is cut have an experience waiting for you.

PATHOLOGIC DISCUSSION

Doctor Johnston: Are there any other comments? The pathologic diagnosis rests with bronchopulmonary sequestration. This was a new entity to me also and we have prepared a brief pathologic demonstration of this disease. I found that Doctor Bergmann has a couple of cases that he is preparing for publication so I would like to ask him to describe the entity briefly and show us a few illustrations of his cases.

Doctor Bergmann: In the present case after we removed the specimen we did injection studies using lipiodol through the aberrant vessel and through the so-called normal pulmonary vessels. Then we took x-rays of the specimen. These are of some interest. In the first you can faintly see the lipiodol in the aberrant vessel and the calcifications (fig. 4). Of course the large separate cyst is gone and no longer connected to this specimen. You see the anomalous vessel which supplies the lower part of this lobe. With more dye injected through this vessel (fig. 5) we visualized one of the branches or tributaries of the inferior pulmonary vein. This vein was identified as such at the time of operation and it filled to our surprise on this film.

I have seen two similar cases previously at the Jewish Hospital in St. Louis. One was a case report we found in our autopsy files. The other was of a 15-year-old boy who had a cyst with an air fluid level and who was operated on because of the cyst. In that patient there were no less than six anomalous vessels entering the lung. In the autopsied patient there were two anomalous vessels. We have gone over the literature and have not found from previous records any instance of more than one anomalous vessel entering the lower lobe. This has practical importance because it is quite easy to find yourself face to face with one of these vessels tie it and then without expecting to find others come up against a few more. The other thing that was interesting about these cases is that the autopsy case in which the lesion was an incidental finding was one of a bronchial adenoma in the wall of a large cyst. This would perhaps not be unexpected to people like Doctor Evans Graham who for years have talked about the coexistence of congenital anomalies and certain lung tumors.

Our special interest in these cases however was in the double blood supply. Pryce and others have previously described the development of proportion to the patient's age of arteriosclerosis in the anomalous vessel. In these patients however we found that there was no marked arteriosclerosis in the anomalous vessel but that the sections of the pulmonary artery showed arteriosclerotic changes out

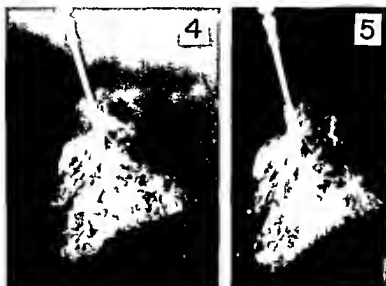


Figure 4. Roentgenogram of the right lung showing the presence of a large, white, fibrous mass on the surface of the lung. Figure 5. Same as figure 4 after the removal of the mass. The mass is composed of fibrous tissue.

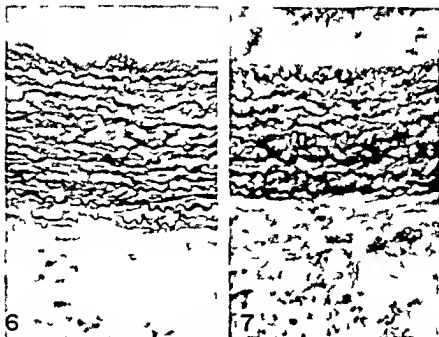


Figure 6. Elastic tissue of wall of the right lung. The wall is of greater thickness and contains more elastic fibrils than does a normal pulmonary artery. Figure 7. Elastic tissue of wall of normal pulmonary artery. Magnification is the same as that of figure 6.

of all proportion to the age of the patient. The pulmonary vessels in the 15 year old boy had more arteriosclerosis than you would see in a 70 year-old person. As you know the pulmonary arteries are relatively immune to degenerative changes. In the autopsied patient the arteriosclerosis of the pulmonary vessels on the affected lobe was also much more severe than in other parts of the lung.

Another aspect of this problem in which we were interested was to establish the nature of the anomalous vessels. They have been called pulmonary with abnormal connections. Actually the histologic structure showed them to be quite different from pulmonary arteries and they resembled the muscular or hybrid arteries that arise from the aorta. Their elastic fibers were longer and thicker and their walls contained much more muscle than there is in pulmonary arteries. We also did micro incineration studies of the anomalous vessels and of normal pulmonary arteries. Arteriosclerosis in blood vessels is accompanied by an increase in the mineral ash residue following micro-incineration. The 15 year-old boy's vessels were micro incinerated and showed far more mineral content in the pulmonary artery than you would find in a normal pulmonary artery. By comparison the anomalous vessel had very little mineral content and did not show signs of arteriosclerosis. Our explanation is that the anomalous vessel is built to withstand the high pressure to which it is exposed. The pulmonary vessels as such are not geared to that type of pressure and they respond to increased pressure as all vessels probably do by degenerative changes. I might say that these are very marked not only in the true pulmonary arteries but there is also a marked phlebosclerosis probably reflecting the propagation of the increased pressure into the venous circulation.

Doctor Johnston: The specimen received in the laboratory consisted of the lower lobe of the right lung which was injected with formalin before section and a separately submitted cystic mass measuring 5 cm in diameter. Since this disease is new to me I will first present definitions. Sequestration according to the dictionary means separation, isolation or seclusion. Bronchopulmonary sequestration means partial or complete developmental separation of a portion of a lobe of lung from its continuity with the normal bronchial tree. This can be of two types: intralobar in which the separation exists within the pleura of the lobe of the involved lung and extralobar which exists when there is a separate cyst encased in separate pleura.

The posterior and lateral surfaces of the pleura of the lower lobe of the right lung were covered by firm fibrous adhesions. An aberrant artery 0.5 cm in diameter entered the inferoposterior medial margin and was distributed to the posterior basal segment. This region was pale yellow gray and firm. Throughout were cysts varying from 0.1 to 2 cm in diameter. These were lined by pale gray glistening tissue. The lumen of the bronchus of this segment was smaller than the lumina of other bronchi in the lobe. Communication between the cysts and

bronchi could not be demonstrated although a small bronchus was found adjacent to the wall of the largest cyst

Microscopic examination revealed many cysts lined by typical respiratory type of epithelium surrounded by loose connective tissue in which smooth muscle fibers cartilage and lymphocytes were found. More dense fibrous connective tissue filled the spaces between cysts. This was infiltrated by lymphocytes plasma cells and macrophages some containing brown granular pigment and others with foamy cytoplasm. A small focus of caseous necrosis was found in the cystic area. Acid fast bacilli and fungi were not identified with special stains. The aberrant artery was an elastic type artery similar to a pulmonary artery although stains for elastic tissue revealed larger and more abundant elastic fibers (fig 6) than in a comparable section from a normal pulmonary artery of the same size (fig 7). The wall of the aberrant artery in the region of the intima was the seat of moderate atheromatous change. An accompanying vein was not demonstrated. There were many small muscular bronchial-type arteries throughout the diseased tissue.

The separate cyst was 5 cm in diameter soft fluctuant and covered by a thin smooth glistening dark red blue tissue. Blood vessels were not identified on the surface. A cut surface consisted of cysts similar to but larger than those of the lower lobe of the right lung. The cysts were filled with gray glistening tenacious secretion.

Microscopic examination of this cyst revealed large and small cysts similar to those of the first specimen. Vessels of the small muscular type were seen. There were no elastic-type vessels in this specimen.

Doctor Breckler mentioned something of the pathogenesis of this disease. In the very early development of the embryo the primitive gut is covered by a vascular network of the splanchnic plexus which is in intimate association with the dorsal aorta. At about the 3 or 4 mm stage the anlage of the lung sprouts from the foregut and carries with it part of this plexus. This is called the postbranchial pulmonary plexus and into this the right sixth aortic arch connects to become the pulmonary artery. Now if for some reason in the course of development there is not a severance of this communication between the postbranchial pulmonary plexus and the dorsal aorta anomalous arteries may remain and be directed into the base of one or both lungs. In the development of the pulmonary bronchial tree at about the fetal age of six months there are some 17 generations of bronchial branching and then the process slows down until after birth. After birth the branching continues into midchildhood. At the time it ceases there are 24 generations of bronchial branching. The concept which I believe originated with Pryce and associates who first described a series of these (although there were individual reports before) includes the traction theory which accounts for the breaking off of developing bronchial buds by the traction exerted by the aberrant vessel. There are cases reported of aberrant vessels without pulmonary anom-

alies Pryce and others have divided the abnormalities into three general categories. Type 1 lacks pulmonary anomalies; the vascular supply to normal lung being through the anomalous vessel. Type 2 is described as pulmonary sequestration in which the vascular supply through the aberrant vessel is also distributed to normal adjacent pulmonary tissue. Type 3 occurs when the anomalous vascular supply is limited to the sequestration. Others have said that this process of traction on developing buds from the anomalous vessel during embryonic development will even account for agenesis of the lung.

Pathologic diagnosis

Bronchopulmonary sequestration with both intra and extralobar sequestration

Doctor Johnston: Extralobar sequestration is synonymous with an accessory lower lobe of lung.

I would like to ask Doctor Weiss if he would say a few words about the clinical aspects of this particular disease.

Doctor White: Fortunately I am in the same position as the pathologist here. All I have to do is transmit a little information gleaned from a recent article by Bruwer and associates¹ on the clinical aspects of this rather unusual lesion. This was a report of five cases subsequent to a previous report by him and his group² at the Mayo Clinic in 1950 when they reported their first five cases. A recent editorial³ in the *Journal of the American Medical Association* reviews much of the literature on this subject. From the standpoint of incidence Bruwer and others¹ mentioned that they were able to collect 79 cases in which the lesions had been resected. These included cases not only of actual pulmonary sequestration but some cases of anomalous vessels only. Pryce and co-workers mentioned that five cases were found during the course of 280 resections making an incidence of 1.7 percent of resected pulmonary lesions.

Personally when we uncovered this case this was a new entity to me too but as I look back about nine years I can recall one other case in my own experience. A child of 11 years of age seemed to have an empyema in the left chest and died rather suddenly of exsanguination due to erosion of the left subclavian artery by the infection. Underlying this was a collapsed lung with cystic disease and an anomalous vessel came off the aorta to supply the base of the lung. At that time we didn't make the diagnosis either even at autopsy. The correct diagnosis was suggested at a clinicopathologic conference by Doctor John Alexander who was visiting the hospital. In 69 cases in the literature in which the side was mentioned the right side was involved in 30 cases the left in 38 and only one case was bilateral. Bruwer and associates mention sex in only 30 cases: 20 patients were male and 10 female. Five cases were associated with one of the following congenital anomalies: diaphragmatic hernia in the first case even

tration of the diaphragm in the second pulmonary arteriovenous fistula in the third pulmonary agenesis in the fourth and congenital cystic disease in the fifth

Clinically most of these conditions are manifested by symptoms of intermittent infection and this usually starts during the first two decades of life. There is nothing specific about the clinical picture and I think the diagnosis is probably very seldom made preoperatively unless one is aware of the entity. On roentgenogram one sees however a rather characteristic location as Doctor Breckler mentioned a posterior basilar location frequently with solid masses or cavities. If the cavities have fluid levels they have a small communication with the bronchial tree. We should have done a bronchogram in this case because it probably would have pointed to the correct diagnosis for anyone who was acquainted with the disease because the lipiodol would certainly fail to enter the involved bronchial tree. The findings on bronchoscopy are not specific. In the differential diagnosis I'll just mention a few things that come into consideration abscess empyema congenital cyst granulomas neoplasm and probably more bizarre things such as echinococcus cyst.

D ct J h t Doctor Samson would you like to close the meeting?

D t S ma I think it is most interesting and I think Doctor Bergmann, Doctor Weiss and Doctor Johnston should be congratulated for the presentation you have just seen this morning. These unusual things that come along are unusual only because we haven't seen them.

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A doctor must work eighteen hours a day and seven days a week. If you can not console yourself to this get out of the profession.—Martin T. Fischer

Oxyphil Cell Adenoma of the Tongue

H HASKELL ZIPERMAN *Lieutenant Colonel MC USA*

THOMAS H CAPERS *Captain MC AUS*

OXYPHIL CELL adenoma (oncocytoma) is a rare tumor seldom occurring in any site other than the parotid gland and, to the best of our knowledge, never previously reported in a person younger than 49 years of age. When first seen, this five and a half year old patient presented a problem in diagnosis because tumors of the tongue other than those originating from the tongue mucosa are rare. The clinical characteristics of this tumor, however, suggested a subepithelial tumor originating deep within the tongue structure. In considering the differential diagnosis, due thought was given to the possibility of this representing either a hemangioma, a lymphangioma, a rhabdomyoma, a leiomyoma, or a rhabdomyosarcoma. Because of the extreme rarity of oncocytoma in this location and in a child, this was not even considered in the differential diagnosis.

CASE REPORT

A five and one half year old girl was admitted to this hospital on 9 August 1953 because of a tumor mass in the midportion of the left half of the tongue. Her mother stated that she had first noticed this mass in May of 1953 and so far as she could tell it had not increased in size.

The patient had a nontender tumor mass about 2 cm in diameter deep within the midportion of the left half of the tongue. The mucosa over the mass appeared normal. With the exception of moderately hypertrophied and mildly inflamed tonsils all other findings (physical examination laboratory and roentgenographic) were within normal limits. On 11 August the mass was totally removed through an incision on the left lateral side of the tongue. The tumor was found completely encapsulated and was easily shelled out by blunt dissection from the surrounding muscle fibers.

Pathologic Findings Grossly the tumor was well circumscribed and encapsulated. It measured 2 cm in diameter and exhibited a soft gray tan cut surface which appeared slightly lobulated by thin strands of connective tissue. There were no cystic areas.

Microscopically (figs 1 and 2) the tumor appeared to be encapsulated by areolar and fibrous connective tissue arising from the surround

From the 141st General Hospital, Kyushu, Japan. Col. Ziperman is now assigned to Medical Field Service School, Fort Sam Houston, Texas.

ing tongue strom. The fibrous tissue coursed in a trabecular pattern into the tumor mass separating it into fairly large groups of cells arranged in cords and columns. In a few places near the margin of



Fig. 1 Photomicrograph of oxyphil cell adenoma of the tongue ($\times 100$)

the tumor the connective tissue contained a few fibers of normal well differentiated striated muscle. The individual tumor cells were large and generally round or oval in shape. The cytoplasm of the cells had a variably intense strongly eosinophilic staining property and under high magnification was distinctly granular in appearance. The nuclei were usually central in location, oval in shape and were small to moderate in size. In many there was a deeply staining prominent single nucleolus. Occasionally the nuclei were slightly irregular in shape and eccentrically located. Definite mitotic figures within the cells were not observed.

Within some of the cell groups there were a few pseudoacinar spaces. Many of the cells were situated within clear spaces. In a few of the adenoid appearing spaces there was an accumulation of eosinophilic material. Several lymph spaces but no definite duct spaces were observed in the tumor mass. This was considered to represent an oxyphil cell adenoma (benign) of the tongue. (This diagnosis has subsequently been confirmed by the Armed Forces Institute of Pathology.)

Postoperative Course About two weeks postoperatively a small stitch abscess of the tongue was incised, yielding about one milliliter of pus

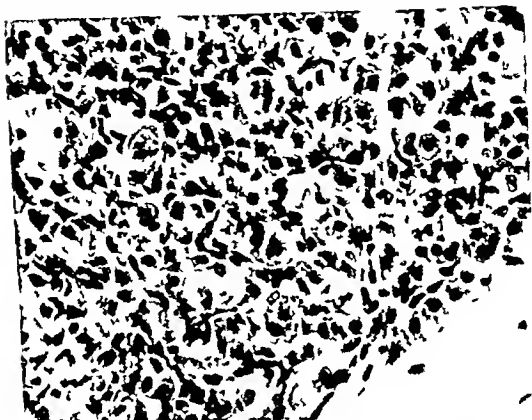


Figure 2 Photomicrograph of a section of the biopsy specimen showing oxyphil cell adenoma. ($\times 450$)

In December a biopsy of an area of firmness of the left border of the tongue was performed because it could not be determined clinically whether this represented scar tissue or a recurrent tumor mass. The biopsy specimen consisted of scar tissue. No evidence of recurrent tumor could be found.

DISCUSSION

Because these cells are usually only found in patients more than 50 years of age, and because oncocytes occur in increasing numbers with advancing age, it has been postulated that these tumors arise from senescent changes in a parotid duct cell whose counterpart exists in a variety of locations, including trachea, pharynx, esophagus, buccal mucosa, pancreas, hypophysis, breast, thyroid, parathyroid, fallopian tube, liver, and stomach. The precise significance of these cells occurring in such a variety of locations defies explanation. In spite of the wide spread distribution of the cell type, tumors formed by oncocytes have been found only in salivary glands, pancreas, thyroid and parathyroid glands, and hypophysis.

Meze Chavez widened previous observations with regard to the occurrence of these cells in the normal parotid gland. He found oxyphilic cells in nine of 100 parotid glands examined at autopsy. In four patients who came to autopsy the cells produced nodular hyperplasia and in five they were present in ducts or acini. Foote and Frezell² reported that in over 800 salivary gland tumors of all types examined at Memorial Hospital between 1930 and 1949 only a single oxyphil cell adenoma was found.

The exact origin of the oncocyte remains a mystery. According to Ackerman³ they are not normally found in persons under 20 years of age. The Welsh cells of the parathyroid gland (a related cell) representing an exception to this rule usually occurs in late childhood but has been found as early as the seventh year. It has been suggested that oxyphil cells represent a new form of an already differentiated cell, or the equivalent of redifferentiation. The natural occurrence of these cells with increasing age has been used as evidence that their peculiar appearance is the result of senescent change. The fact that they apparently reproduce amitotically whereas in physiologic regeneration of salivary glands mitosis is the rule is additional evidence supporting the idea of senescent change. None of the oxyphil cells seem to have a function other than as a lining cell for ducts and acini. We saw no evidence of duct structure in the tumor from our patient to suggest other than unicellular origin as was true in the case presented by Christopherson.

The occurrence of this tumor in a child is most unusual because heretofore this tumor has been reported as occurring solely in adults more than 49 years old. We believe that this exceptional case casts some doubt on the concept that the tumor results from an overgrowth of a senescent salivary duct cell. It is further unusual that the tumor occurred in the tongue. To our knowledge no instance of this tumor in the tongue has previously been recorded.

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*Stop telling men not to worry all thinking men do and
such only do the world's work.*—Martin T F scher

A Peculiar Nodosity Associated With Arthritis

HOWARD S. YAFFEE *Lieutenant junior grade (MC) USNR*

NODULE LESIONS are found in many conditions and may be produced by multiple causes. The following is the report of a case of peculiar, recurring nodosities associated with arthritis.

CASE REPORT

A 24 year old white single seaman entered the U S Naval Hospital Chelsea Mass on 23 October 1953 complaining of pain and swelling of the left knee of four weeks duration.

Present Illness On 15 June 1953 the patient's left knee had been wedged between a dock and a motor launch. An area of redness, "like a brush burn" appeared over the inner left knee which was swabbed with mercuric iodine and bound with an ace bandage in the ship's sick bay. The next morning his entire left leg was swollen, discolored and cyanotic. Examination disclosed diminished peripheral pulses and a palpable cordlike swelling of the left calf. A diagnosis of thrombophlebitis secondary to trauma was made. Treatment consisted of bed rest, ace bandages and 180 mg (300 000 units) of penicillin twice a day for five days. Two weeks later an erythematous fluctuant area resembling a blood blister appeared spontaneously over the medial left calf. Thirty six milliliters of serosanguineous fluid was aspirated from the lesion. Two weeks later the patient appeared to be completely well and returned to duty.

On 3 July he injured his right knee in the same manner as previously described and immediate pain, swelling and limitation of motion followed but subsided on a few days of limited duty.

On 30 July the patient noted the gradual appearance of erythematous dusky slightly tender lumps on the right thigh and left iliac crest. These lesions slowly enlarged and discharged a thin brownish fluid.

One week later the patient was admitted to a small dispensary in Naples, Italy at which time a new lesion was noted on the lower part of his abdomen. Laboratory studies consisting of a complete blood count, hemoglobin determination, Kahn test and bleeding and clotting times were within normal limits. Culture of the drainage from a lesion

From Boston Naval Shipyard, Boston, Mass. Lt. Yaffee is now assigned to U S Naval Hospital Chelsea, Mass.

on the left iliac crest was negative however a few gram positive cocci were seen on smear Despite the absence of fever or constitutional signs and symptoms the patient was hospitalized for two weeks receiving hexavitamin and ascorbic acid tablets The lesions subsided slowly leaving erythematous stellate slightly puckered scars He was returned to duty with a diagnosis of nonspecific cellulitis

On 15 September the patient's left knee swelled without apparent cause He was treated with limited activity ascorbic acid tablets aspirin and terramycin (brand of oxytetracycline) Because of the persistent swelling he was transferred to the U S Naval Hospital Chelsea Mass on 23 October with the diagnosis of traumatic synovitis

Past History When he was a child the patient had had numerous attacks of sneezing and dermatitis after mowing a lawn In 1945 he had had hematuria for three days following football injury In 1951 he received aureomycin for one week because of acute laryngitis In March 1953 he injured his back while carrying a load of sugar following which he had a temperature of from 100 to 101 F for two weeks He was treated with 0.5 gr m of aspirin every four hours 180 mg (300 000 unit) of penicillin twice a day and finally 250 mg of aureomycin every three hours

He is fond of milk and drinks large quantities as much as nine quarts a day Family history and system review were noncontributory

Physical Examination The patient was tall alert intelligent and co-operative and appeared to be in good health Positive findings were limited to the skin and joints Two dusky erythematous pigmented scars were present over the upper medial part of his right thigh and left iliac crest He walked with a marked limp The left knee was swollen partially flexed and externally rotated There was obvious periarticular and intra articular effusion with pitting edema present to the level of the tibial tubercle The synovial margin was thickened and tender Motion was limited to flexion of 40 and extension of 160 There was no instability of the leg

Laboratory Findings Laboratory data revealed a white blood cell count of 8100 per cu mm differential count hemoglobin and urinalysis were within normal limits Rheumatogen examination disclosed soft tissue effusion without bone injury

Course in Hospital On the day following the patient's admission to the hospital 50 ml of yellow opalescent fluid which was sterile on culture and smear was aspirated from the joint A culture taken for acid fast organisms was later reported negative The fluid was loaded with red and white blood cells Flocculation occurred on addition of dilute acetic acid indicating the presence of abnormal mucin.

On 25 October two days later the right knee became red, hot and swollen. The process subsided in two weeks but there was residual swelling and limitation of motion. The temperature remained normal. Laboratory studies including sedimentation rate, blood uric acid, intravenous pyelograms, roentgenograms of the chest, and an electrocardiogram were all within normal limits.



Figure 1 Perivascular round-cell infiltration in the papillary layers of the dermis is seen in this photomicrograph of a specimen from a healed scarred area. The epidermis shows heavy pigmentation of the basal layer of the stratum germinativum ($\times 100$).

On 19 November without apparent cause both knees again became acutely inflamed. Hot packs produced only slight improvement. Aspiration of the joint was repeated, yielding 8 ml. of fluid containing 28 polymorphonucleocytes but otherwise unchanged from findings of previous examinations. Twenty-five milligrams of hydrocortone acetate (brand of hydrocortisone acetate) in saline suspension was instilled into each joint cavity with resolution of inflammation in four days. However, six days after treatment the knees again became red, hot and swollen. The intra-articular hydrocortone was once more administered with complete subsidence of arthritis in three days.

The patient remained well until 16 December, at which time an erythematous, indurated, slightly tender lesion was observed on the upper medial part of the left thigh. The patient was transferred to the derma-

and scattered inflammatory cells. The epidermis was slightly irregularly spongiotic and well contained. There was moderate pigmentation without evidence of specific infection or malignancy.

Diagnosis. The diagnosis was reported as compatible with the Weber-Christian syndrome. The slides were reviewed by several other competent pathologists, including a histopathologist of the skin. They could not reach a specific diagnosis; however, one of them was struck by the marked collagen disruption and necrosis, reminiscent of granuloma annulare.



Fig. 5. Photomicrograph showing area of collagen destruction in the midcorium containing foci of chronic inflammatory cells. (100)

Clinical Course. On regimen of bed rest without medication the lesion subsided leaving a superficial zone of pigmentation. The patient was discharged to his ship apparently well.

On 19 February 1954 while the patient was at sea without apparent antecedent cause new cutaneous nodules appeared over his lower abdomen and inner right thigh. Additional lesions involving the right hip region appeared during the next six weeks. These lesions drained and several others previously

On 7 April the patient was readmitted to the hospital where he appeared well except for slight pain in the left shoulder and two active lesions from which drained a thin brownish watery fluid. Laboratory studies including roentgenograms of the knees, shoulder and skull showed no abnormalities. Figures 4 and 5 are photomicrographs of biopsy specimens at this time.

Bacteriologic study of the drainage was negative on smear culture and acid-fast examination. A fat stain on the material revealed clumps of free fat. A frozen section stained for fat disclosed free fat extending into the superficial dermis lying free in large globs and enclosed in large macrophages.

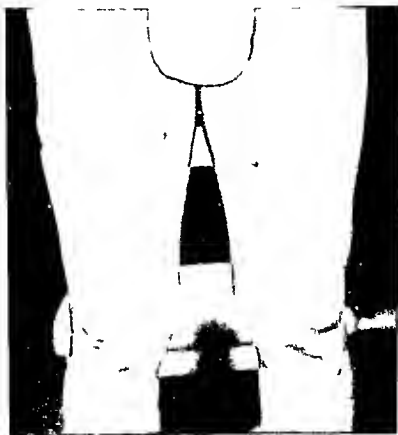


Figure 6 Appearance of patient's lesions

The lesions again subsided in about three weeks without treatment but recurred again (fig. 6). After discharge from the hospital lesions again recurred involving the back and arms subsiding as before. Throughout the course of the illness the patient has felt entirely well with no evidence of fever, weight loss, or other constitutional symptoms.

DISCUSSION

The reported case, although possibly related to the Weber-Christmann syndrome, is believed unique. Of etiologic interest

is the large milk consumption as much as nine quarts a day. However it is unlikely that he obtained this quantity while at sea. The relationship to trauma and thrombophlebitis is not clearly defined although possibly connected with his subsequent course.

The arthritis in this patient is somewhat atypical probably representing a form of rheumatoid arthritis. The distinction between traumatic and rheumatoid arthritis is discussed in a monograph by Ropes and Bauer¹ who point out that trauma is frequently the precipitating factor in rheumatoid arthritis and this becomes especially confusing in monoarticular disease. If joint symptoms do not appear for 12 hours or more following trauma or persist for a month or so after one should hesitate to make the diagnosis of traumatic arthritis.

Somewhat unusual but by no means rare is the absence of constitutional signs and symptoms such as fever, easy fatigability, weight loss, anorexia, splenomegaly and debility. Similarly the laboratory findings were within normal limits, including repeated sedimentation rates, a finding noted in 5 to 10 percent of patients. That the local joint disease is of a mild nature is confirmed by the lack of objective evidence of bone changes such as subchondral atrophy and so on. The abnormal clumping of mucin on addition of diluted acetic acid is suggestive of changes noted in the joint fluid of patients with rheumatoid arthritis. Infectious arthritis is ruled out by the history, laboratory findings and clinical course.

The response to 25 mg. of intra articular hydrocortone followed by a "rebound" in six days with apparent cure by reinstitution is of interest. The reappearance of cutaneous lesions 10 days after the initial injection of hydrocortone suggests a possible etiologic relationship; however the rather prolonged latent period and the absence of lesions at the site of injection seem to mitigate against this hypothesis.

The differential diagnosis of the cutaneous lesions included erythema nodosum, erythema induratum, nodular vasculitis, drug eruption, lymphoma, atypical collagen disease, factitial lesions such as those produced by camphor injections and the Weber-Christian syndrome. Of these only the latter need be considered.

The Weber-Christian syndrome was first delineated by Weber² in 1925 although single cases had been previously described by Pfeiffer³ and Gilchrist and Ketron. It is a relapsing, non-suppurative, febrile panniculitis. In past years numerous cases with single and multiple lesions, with and without fever, with and without suppuration, and at times associated with arthritis, rheumatic fever, and other collagen diseases have been re-

ported Suggested causes are varied, including drugs, bacteria, heat, cold, or trauma¹¹⁻¹⁶ The syndrome is probably a variable clinical and pathologic response to diverse agents Beerman's¹⁷ views on the pathogenesis of this condition is up to date and worthy of review

I believe that my case, although vaguely related to Beerman's is unique The initial cutaneous lesion was described as a "blood blister" containing "serosanguineous fluid" It is important to correctly establish the nature of the fluid as the initial diagnostic aid Pseudobullae containing fatty material have been described, both in local and in generalized distribution, in cases of fat necrosis¹⁸⁻²⁰

In one such case microscopic examination disclosed only globules Such examination differentiates the absence of red blood cells, ruling out a hemorrhagic exudate It is vital that bacteriologic preparations be collected using aseptic technic, because in this patient a mistaken diagnosis of cellulitis was entertained after a smear in a small field dispensary revealed gram positive cocci," undoubtedly contaminants from the skin

The pathologic picture is believed to be the major factor in differentiation of the entity reported In this case pathologists, including a dermatopathologist, were loathe to make a specific diagnosis, despite the marked panniculitis, because necrosis was seen both in the fat and in the collagen tissue The changes in the corium were severe, a finding not seen in the Weber-Christian syndrome²¹ The disruption of collagen and necrosis raised the possibility of granuloma annulare like disorder, although the other features of marked reaction of the fat, such as necrotic masses of free fat and foamy macrophages, rule this out

SUMMARY

A case of recurring nodose lesions in a 24 year-old white seaman, in which there was associated arthritis, presumably rheumatoid in nature, was possibly precipitated by trauma and followed by thrombophlebitis Of interest is the prolonged history of excessive milk ingestion The pathologic features of the cutaneous lesions were a necrotizing panniculitis with additional collagen necrosis This disease process is recurrent and apparently has not affected the patient's general condition

ADDENDUM Correspondence with the patient reveals that he has continued to develop new lesions over the arms, legs, trunk and abdomen which drain as described The material oils his clothing and bedding and has caused intermittent depression Despite his cutaneous affliction he has otherwise remained well He is working and is active He is under the care of an internist and has received no treatment to date

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Half the modern drugs could well be thrown out the window except that the birds might eat them.

—Martin T. Fischer

Schistosomiasis of the Colon Treated by Resection

PAUL V. KIEHL, *Lieutenant Colonel MC USA*
JAMES S. MITCHENER, Jr. *Captain MC NGUS*

SCHISTOSOMIASIS as a public health problem in the tropics is surpassed only by malaria and tuberculosis. Three types of schistosomes are the causative agents: *Schistosoma mansoni*, *Schistosoma haematobium*, and *Schistosoma japonicum*. Only *S. mansoni*, which has the widest distribution, is present in Puerto Rico. Weller and Dammin,¹ in a study of selective service registrants in Puerto Rico, found the ova of schistosomes in 9.97 percent of 19,839 men on whom a single stool examination was done. This organism attacks principally the liver and the colon. Massive and repeated infestations cause portal cirrhosis and eventually portal hypertension. In the colon, varying degrees of proctitis occur but only rarely do large granulomatous lesions requiring surgical removal develop.

Man contracts the disease by physical contact with fresh water polluted with ova from human excreta. The snail acts as an intermediate host, ingesting the ova, and releasing motile cercariae which penetrate the epidermis and mucous membranes of man. These forms finally migrate to the portal venous system where they undergo maturation into separate sexes. Myriads of ova are produced. Some of these migrate to the minute portal venous branches, producing granulomata and fibrosis, while others are extruded into the lumen of the gut and are passed in the feces, thus completing the cycle. Ova lodging in the submucosal wall of the gut, particularly the rectum, occasionally produce the large intraluminal granulomata seen in our patient. These organisms do not multiply within the definitive host (man) but the damage is done by continuous deposition of ova. Thus it seems that repeated reinfection with the asexual cercariae from polluted water is necessary to produce the severe manifestations of the disease.

According to Kehoe and Lang,² who conducted a study on military personnel in Puerto Rico, 46 percent of their 129 patients were asymptomatic. Also in Puerto Rico, Hernandez Morales³ found that 50 percent of 255 patients studied had only prominent vasculature of the rectal mucosa with scattered minute hemorrhages.

ic areas particularly in the proximal rectum. In five patients he noted small papillomatous lesions but no large ones. Many patients with normal appearing rectal mucosa will show microscopic evidence of the disease if a biopsy of the rectal mucosa is taken.

The treatment of schistosomiasis due to *S. mansoni* is primarily medical, surgical treatment being reserved for localized lesions. A venous shunt procedure may become necessary in this disease because of severe portal hypertension with esophageal varices. Ova obstructing the blood supply of the appendix may produce acute gangrenous appendicitis requiring surgical treatment. According to Rocio, surgical intervention may become necessary because of intestinal obstruction or malignant degeneration. Considerable bleeding may occur from an ulcerated granuloma and may result in chronic anemia.

CASE REPORT

A 30-year old Puerto Rican officer was admitted to this hospital on 12 April 1954 with a chief complaint of intermittent rectal bleeding for one year. The past and family histories were noncontributory. He had been in good general health until the onset of the present illness. Most of his life had been spent in the city of Mayaguez, an area where relatively little schistosomiasis is found. At times he had bathed in water from inland streams and lakes on the island of Puerto Rico that are known to contain schistosomes.

About one year before the present admission the patient began passing small amounts of bright red blood in his stools. He also developed intermittent bouts of diarrhea of four or five watery stools a day which frequently contained blood and considerable mucus. In February 1954 on sigmoidoscopic examination at this hospital a large polypoid granuloma was noted in the upper rectum occupying the bowel about 6 inches above the sphincter. Multiple pseudopolyps which seemed to consist of congested edematous folds of mucosa were noted. A few pinpoint areas of extreme vascular dilatation close to the surface of the mucous membrane undoubtedly represented bleeding sites. The lesion was not of the friable, easily bleeding nature of carcinoma. Examination of several biopsy specimens of this area of the rectum demonstrated the presence of *S. mansoni*.

On 31 March a course of therapy consisting of 75 ml of fuadin (brand of tibophen) was completed. At this time proctoscopic examination revealed no change in the rectal lesion. Because the lesion and the bleeding persisted a resection of the lesion was considered the only definitive treatment. Obstruction at a later date as a result of scarring was a remote possibility. The patient was obese; he weighed 230 pounds and gave no history of recent weight change. The liver and spleen could not be felt.

Laboratory studies on admission revealed Hemoglobin 16.7 grams per 100 ml leukocyte count 7,410 per cu. mm. with 52 percent neutrophils 39 percent lymphocytes and 9 percent eosinophils. Barium enema and air contrast studies showed a constant polypoid lesion near the rectosigmoid junction. The remainder of the colon was normal.

At operation on 26 April the lesion was found to be located in the sigmoid at the peritoneal reflection. The bowel was grossly normal on the serosal surface but the intraluminal mass could easily be felt. The bowel was thoroughly mobilized and a segment 9 cm. in length excised. A two layer anastomosis was done.

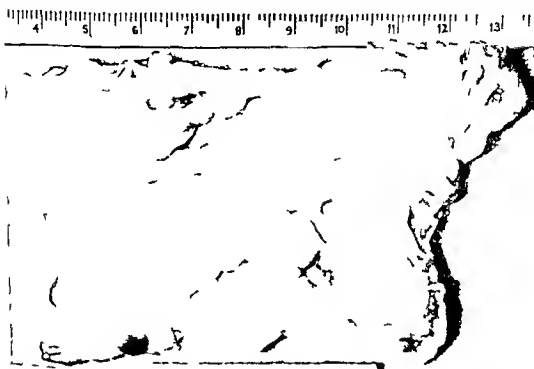


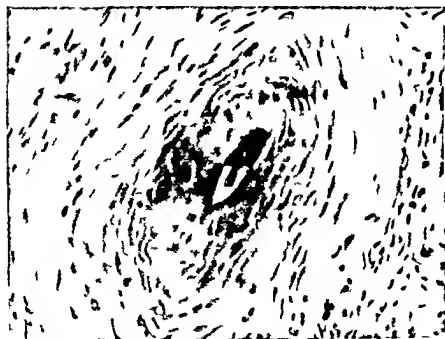
Figure 1 Gross specimen showing polypoid mucosa and a site of ulceration from which hemorrhage probably occurred. (Ulcer is at the lower portion of specimen just to left of center.)

The patient's postoperative course was uneventful except for a mild wound infection. He was discharged from the hospital on the sixteenth postoperative day and had no further difficulty. On 16 June sigmoidoscopic examination revealed the bowel to be healed with no narrowing of the lumen. The patient was interviewed briefly early in January 1955. He had had neither bleeding nor diarrhea since the operative procedure.

Gross examination of the excised tissue which measured 9 by 6 cm. showed numerous elevated sessile polypoid formations of mucosa which appeared swollen and edematous. In the center of the specimen there was an area 3.5 cm. in longest dimension which was depressed and partially ulcerated through the mucosa (fig. 1). Microscopic examination of sections showed the typical granulomatous involvement of schistosomiasis. Numerous ova of *S. mansoni* were seen scattered



Figur 2 Photomicrograph showing the histological details of the colon (x about 100)



Figur 3 Photomicrograph of the histological details of the colon (x about 430)

through the submucosa (figs 2 and 3) The tissue appeared edematous There were myriads of round cells with a smaller number of polymorphonuclear cells and an increased amount of fibrous tissue

DISCUSSION

When surgical therapy has been decided on for a colonic lesion caused by schistosomiasis the question arises as to what type of procedure to use An abdominoperineal resection in this patient was considered because of his marked obesity and the low level of the lesion It was also suggested to us by a local surgeon that there might be poor healing of an anastomosis because even bowel appearing grossly normal often contains the ova We believe that only in very rare instances should an abdominoperineal resection with colostomy be necessary A pull through procedure should be possible in most instances where end-to-end anastomosis cannot be accomplished from above It is not necessary to resect large blocks of tissue in operating for schistosomiasis of the colon as it is in the case of operations for carcinoma

SUMMARY

Schistosomiasis caused by *S. mansoni* produced a granulomatous lesion in the rectosigmoid colon Because bleeding from the lesion persisted in spite of therapy with fuadin, a successful resection with end to end anastomosis of the colon was performed

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MAGNETS IN DENTURES

A new stabilizing force that increases the serviceability of dentures has been obtained through the employment of magnets that repel The force of repulsion is alive resilient and permanent and can be directed and controlled The upper denture forces the lower denture down and back on the ridge The lower denture repels the upper denture which prevents disaster when the peripheral seal is broken

—HYMAN FREFMAN D D S

in *Journal of the American Dental Association* p 297 Sept 1953

Carcinoid Tumor of Meckel's Diverticulum

ROBERT E. PIERCE *M.D.* USAF (MC)

CARCINOID (argentaffin) tumor in the Meckel's diverticulum is extremely rare. In addition to the patient reported here, only eight similar proved cases are recorded in the literature (table 1). A ninth reported case has been determined to be an instance of gastric heterotopia.^{1,2} In only one instance were metastases found.³

Enterochromaffin (chromaffin argentaffin) cells take their name from their affinity for chromium and silver salts. These cells are found in fishes, amphibians, reptiles, birds, and mammals. They are present in all ages in the entire human alimentary tract, and even in its offshoots. They are most numerous in the duodenum, being present both on the villi and in the crypts, and in the glands of Brunner. The numbers decrease from the duodenum to the anus.

Argentaffin cells are solitary bodies which normally are never very numerous at any point and seldom are found lying in apposition. Their shape is largely determined by their location, the cells adapting themselves to the available space. The nuclei are round with a distinct nuclear membrane and are vesicular in character.

The cytoplasm contains numerous small granules which show a marked affinity for chromium salts and silver. The granules are minute, irregular, and tend to be round, but have no definite shape. There is a tendency for the granules to be located in the cytoplasm between the nucleus and the basement membrane of the cell, suggesting the name basal granular cells.

The physiologic role of the chromaffin cell is unknown and its origin is similarly undetermined. It is theorized that (1) they arise in the intestinal epithelium, and (2) from the ectoderm outside of the epithelium. They are found intimately associated with the ganglion cells and fibers of the sympathetic nerve plexuses of the alimentary tract. Because of this intimate association they have been regarded as related to this system functionally as well as genetically.

Interest in these cells arises because of their implication in the production of tumors of the intestine, notably of the appendix.

Fred Edward Sparrow, H. Paul Lang, M.D.

In 1907, Oberndorfer⁷ advocated the separation of these tumors from the carcinomas and, because of their usually benign nature, proposed the name "carcinoid," which has become generally accepted. The tumor cell of the carcinoid, which is developed from the enterochromaffin cell, shows many of the peculiarities of its genotype. The cytoplasmic granules may be large or small. They often show characteristic staining with chromium, silver, iron hematoxylin, and acid dyes. Numerous cytoplasmic vacuoles occur.

TABLE I *Carcinoid tumors found in Meckel's diverticula*

Author	Year	Age	Sex	Silver reaction	Metastasis
Stewart and Taylor ²	1926	54	M	Positive	None
Perc ⁹	1935	54	F	Negative	None
Hertzog and Carlson ¹⁰	1935	54	M	Positive	None
Hertzog and Carlson ¹⁰	1935	58	M	Positive	None
Collins and associates ¹¹	1937	56	M	Negative	None
Ashworth and Wallace ¹²	1941	46	M	Negative	None
Potter and Scott ¹³	1951	68	M	Positive	None
Stoll ⁴	1953	58	M	Positive	To liver (also liver positive)
Pesantale	1954	47	M	Positive	None

Humphreys found from a study of carcinoids of the gastrointestinal tract, with the exception of the appendix, that 30 percent were multiple. Thus discovery of one of those tumors at operation should lead to a search for others.

Carcinoid tumors usually occur as yellowish white rubbery nodules in the submucosa.⁷ They may vary greatly in size. There is little difference in gross appearance from adenocarcinoma. Microscopically they are composed of round or polyhedral cells which are usually clumped in nests or strands. The nuclei are vesicular and the cytoplasm is pale and poorly defined. Staining with silver or chromium salts shows the cytoplasmic granules of varying size.

CASE REPORT

A 47-year-old man was admitted to the hospital with the complaint of severe abdominal pain. The illness had begun when he was awakened from a nap four hours before admission with a sudden extremely severe epigastric pain.

The only contributory feature of the past history was the occasional occurrence of a gnawing mild epigastric distress which was not severe.

enough to be disabling. He had not been anorexic. The pain was not related to or relieved by the ingestion of food and was not severe enough to make him consult his physician. There was no nausea, vomiting or change of bowel habits.

The family history was noncontributory.



Fig. 1. Biopsy specimen of the tumor mass found in the wall of the duodenum, showing the arrangement of round and polygonal cells, the submucosa and infiltrating the muscularis (Hematoxylin stain, $\times 100$).

The physical examination revealed a well developed obese white man in acute distress. The temperature was 98.6 F, respiratory 20 per minute, pulse 92 per minute and the blood pressure was 170/80 mm Hg. Positive findings were limited to the abdomen. The entire abdomen showed a boardlike rigidity and was exquisitely tender. There was questionable rebound tenderness and no point tenderness. No organs or masses were palpable because of the rigidity.

The laboratory examination showed an erythrocyte count of 5,690,000 per cu. mm, hemoglobin was 19.9 grams per 100 ml. The leukocyte count was 24,850 per cu. mm with differential count of 18 nonsegmented neutrophils, 54 percent segmented polymorphonuclears, 26 percent lymphocytes and 2 percent monocytes. The urine was a hazy lemon yellow color with acid reaction and a specific gravity of 1.011. No sugar, albumin or ketone bodies were found. Microscopic exam-

ination of the urine revealed 0 to 3 white blood cells per low power field. The serum amylase determination was 190 mg per 100 ml.

A roentgenogram of the abdomen showed no evidence of gas accumulation beneath the diaphragm nor of fluid levels in the gas-containing organs. There was no evidence of opaque calculi in the urinary or biliary

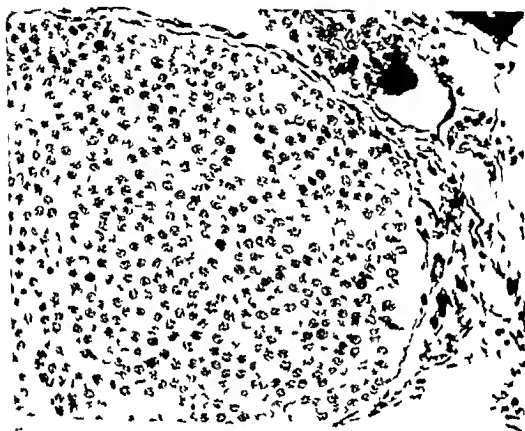


Figure 2. Photomicrograph showing argyrophilic granules in the cytoplasm of the tumor cells (Silver stain $\times 450$)

ary tracts. Roentgen examination of the chest revealed essentially normal findings.

An emergency laparotomy was performed two hours after the patient's admission to the hospital. Inspection of the peritoneal cavity revealed a moderate amount of bloody nonpurulent exudate. A Meckel's diverticulum, which was indurated but not perforated, was found about 18 inches from the cecum. The diverticulum was removed. The sigmoid colon was found to be thickened, edematous and inflamed for a distance of about two and one-half inches and was about the size of a lemon. Careful examination of this area revealed it to be filled with multiple diverticula, one of which was perforated.

Pathologic Findings. Grossly the surgical specimen consisted of a diverticulum measuring 2.5 cm in length and 2 cm in diameter. The serosal surface was smooth. On section, the wall ap-

poared thickened and rubbery. No definite nodules were palpable. The lumen contained greenish firm material which partially obstructed it.

The microscopic examination showed a wall composed of two layers of smooth muscle. A lining of villous mucosa resembling that of the ileum was present. In the submucosa and infiltrating the muscularis (fig. 1) were numerous nests and cords of round and polyhedral cells. The cellular boundaries were poorly defined. The nuclei were large and well defined. The cytoplasm was granular in appearance. The cells were supported by a fine fibrous stroma. They were uniform in appearance and no mitosis was observed.

Staining with Masson's silver stain showed argyrophilic granules in the cytoplasm of the tumor cells (fig. 2). These granules varied in size and shape and were scattered haphazardly throughout the cytoplasm. The granules were also positive to Masson's trichrome stain.

Following surgery the patient recovered rapidly and with no complications. He was discharged as completely recovered after seven days of hospitalization.

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PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army, Navy, and Air Force have recently received temporary promotions to the rank indicated

Medical Corps

R bert O Amdall Capt USAF	H old A. Davi Lt Comdr USN
Alb t A. Ap h ga Capt USAF	B rry D ck Capt USAF
M tn W A plund Capt USAF	Robe t A Dennaio Capt USAF
A ith Auli Lt Comdr USN	Ri hard Derby Lt Comdr USN
Zbagn w J B cz w k Lt Col USAF	Vinc nt S. D g ul o Capt USAF
J eph C. Bailey Capt USAF	He y R. D k Jr Capt USAF
H w rd A B k Lt Comdr USN	Edw G Eby Lt Comdr USN
Geo g C. Barr tt Capt USAF	R bert J F archild Capt USAF
Charl B B t ll Lt Comdr USN	R br t K Fankha s Lt Comdr USN
E g H B t u Lt Comdr USN	M k J F tzt tick Capt USAF
R bert H B y ng Capt USAF	Go d n H Fl ch k J Capt USAF
H rman D B t Capt USAF	Gl Floyd Lt Comdr USN
Th m s P Berry Lt Comdr USN	W ll m P Folek Lt Comdr USN
A th E B bb Capt USAF	R bard C Fowl Lt Comdr USN
Geo g F B d Lt Comdr USN	Gl don C F Capt USAF
Ge g C. Bour Lt Comdr USN	V nc nt J F da Capt USAF
J b L B dly Maj USA	Perry Futterma Lt Comdr USN
Fl yd S. Bra Capt USAF	F s S G d J Capt USAF
Thoma J Book J Lt Comdr USN	J s phl G rc J Lt Comdr USN
B j m H Brown, Capt USAF	W llam B G rvey Capt USAF
Loy T B w Lt Comdr USN	P J G det Lt Comdr USN
Th ma B Bow g Capt USAF	Phl p O G b Lt Comdr USN
Perry A B ck t Capt USAF	H mer W Godt y Capt USAF
J h N. Bryan, Lt Comdr USN	Har ld Goodman Capt USAF
Ralph W Budd g J Lt Comdr USN	J m E G odm Lt Comdr USN
Th m E Burrow Lt Comdr USN	J hn B Go man, Capt USAF
W lter H. Byerly Capt USAF	All L G uld g J Lt Comdr USN
W ll m P Byr Capt USAF	Edgar D. G dy Lt Comdr USN
John W Campb ll Capt USAF	O ar Gray J Lt Comdr USN
Jetom G Car ll Capt USAF	F k D Ge n Lt Comdr USN
Sam Ca ar Lt Comdr USN	Roy R. Gr g Lt Comdr USN
R nd lph Catlin J Capt USAF	Joe J Giff Lt Comdr USN
J an A Chapma Capt USAF	P ul v Gustals Lt Comdr USN
Frankli J Ch Capt USAF	H ry M H g ney III Capt USAF
Thom R Cl mon Lt Comdr USN	W lf d R. H Lt Comdr USN
J h D Coff y J Lt Comdr USN	Carl J H upmann Lt Comdr USN
Mahl C. Co n tt, Capt USAF	J me B H tt Lt Comdr USN
J h M Co nolly Capt USAF	J me B H shaw Capt USAF
N l B Copl y Capt USAF	Georg M Himadi Lt Comdr USN
D d l C nn gham Lt Comdr USN	J me C. Hodg s, J Lt Comdr USN
R bert E. C nn gham Jr Lt Comdr USN	Thodore C. H wa d Capt USAF
Leo N Curtin, Lt Comdr USN	Robert T H ghe Capt USAF
Charl E Curt ss Capt USAF	Thomas C. Iden Lt Comdr USN
Wall N. Da dson, Capt USAF	Edwa d P Ieri g Lt Comdr USN
Cha l s P D vis, Capt USAF	Samuel C. Iw s Jr. Lt Comdr USN

Medical Corps—Continued

P ul l J bs Capt. USAF
 M u D J ff Capt. USAF
 Robe E. J Lt. Comdr. USN
 O B K hn Lt. Comdr. USN
 Ma h l l K te Lt. Comdr. USN
 Sum er K ufn Lt. Comdr. USN
 Donald M K Lt. Col. USAF
 Do ld J K l l Lt. Comdr. USAF
 Da d M Kl Capt. USAF
 Will m T K ik Capt. USAF
 Cla s E Aouf Lt. Comdr. USN
 J H Knowl Capt. USAF
 J h D K fch k, Lt. Comdr. USN
 H ory F Kram J Lt. Comdr. USN
 H y K Lt. Comdr. USN
 Leo d J K l J Lt. Comdr. USN
 F d P K un b Capt. USAF
 A tho y M. Ku l ad, Lt. Col. USAF
 R b H L s Capt. USAF
 J eph R L gd Capt. USAF
 Geo g C. L w Lt. Comdr. USN
 W l l m R. Lee Lt. Comdr. USN
 Edw d J L un Capt. USAF
 P H L vi a, Capt. USAF
 J ck J L w Lt. Comdr. USN
 Rob rt A. L w Capt. USAF
 Sol m E L if Lt. Col. USAF
 Dal R L dall Capt. USAF
 V no R L rd Capt. USAF
 J ha H Loda Capt. USAF
 J ph P Loo Capt. USAF
 R be H F Ly h, Lt. Comdr. USN
 H b l U Mar Capt. USAF
 Ru ha d J M rt n, Lt. Comdr. USN
 Rayno d G M bew Lt. Comdr. USN
 W rt E. May Capt. USAF
 J ck M M Cab Capt. USAF
 Will m C. M Co mi k Capt. USAF
 J hn l l M E Lt. Comdr. USN
 L R. M F land J Lt. Comdr. USN
 Tere n F McGu Capt. USAF
 Charl J M P ak Lt. Comdr. USN
 Cha l A. M d J Lt. Comdr. USN
 K h M l l J Lt. Comdr. USN
 J hn D Miller Capt. USAF
 J h P M ll Lt. Comdr. USN
 Cl yto C. M s n, Capt. USAF
 P ul W M g n, Lt. Comdr. USN
 H ber S. Mor Lt. Comdr. USN
 Thoma L. Mor ow J Lt. Comdr. USN
 Cha l C. Mueh Lt. Comdr. USN
 L th Q Mye Lt. Comdr. USN
 J hn S n, Capt. USAF
 Geo g L. Nardi, Lt. Comdr. USN
 J h R. h w k Lt. Comdr. USN
 M vi G. N wby Capt. USAF
 Marv N be g, Lt. Comdr. USN
 Edw d P Nor J Lt. Comdr. USN
 R b L N Capt. USAF
 R l l d F O k Capt. USAF
 W yne R. O l h f Maj. USA
 Ge g L O bor J Capt. USAF
 M l l d P ark Capt. USAF
 J m P T P ul y Lt. Comdr. USN
 R b H P w l Capt. USAF
 J hn W P k Lt. Comdr. USN
 Ge g A P d Lt. Comdr. USN
 Ge g H P w Lt. Comdr. USN
 J hn H P w Capt. USAF
 B lly J P k Capt. USAF
 J b R Qui Capt. USAF
 L dbe gh J Rahh l Capt. USAF
 G org C R Capt. USAF
 Cha l R b Capt. USAF
 G ald B R m Capt. USAF
 Ad R J Lt. Comdr. USN
 Herbe R f k Lt. Comdr. USN
 Ber d R b ns Capt. USAF
 B ard W R b ns n, Lt. Comdr. USN
 H nry N R s Lt. Comdr. USN
 Jul us C. Ro h Lt. Comdr. USN
 Ch l E R l l Lt. Comdr. USN
 I w W R Capt. USAF
 G ld E R backy Capt. USAF
 J m A. Ry J Capt. USAF
 Aro D Ryd l nd Lt. Comdr. USN
 Ralph E. Samuel Lt. Comdr. USN
 H be F Sandm Capt. USAF
 J ph A. Sch ler Lt. Comdr. USN
 M ur R S bmo y J Lt. Comdr. USN
 H nry l d F S bw k J Lt. Comdr. USN
 H w d C. Sco Capt. USAF
 Rich d H S Lt. Comdr. USN
 V g l E. Se be Lt. Comdr. USN
 Robe H Se f id, Capt. USAF
 Edw d S Sh l l y Lt. Comdr. USN
 H y W Sh pp d, Lt. Comdr. USN
 R ha d E Sho t, Capt. USAF
 William T Shul z, Capt. USAF
 J ph E Shura Capt. USAF
 M C. Silve th Lt. Comdr. USN
 David T Sm l y Capt. USAF
 Cha l G Sm h, Lt. Comdr. USN
 D d S. Sm th Lt. Comdr. USN
 L d K Sm h, Lt. Comdr. USN
 Par l l Sm th J Capt. USAF
 Ru ha d L Smith Capt. USAF
 Elwy M Smol n, Lt. Comdr. USN
 J m T Sp J Lt. Comdr. USN
 Robe W Sp be Lt. Comdr. USN
 Adolph J Stamp l Capt. USAF
 N wson Sool Capt. USAF
 N l F Str et Capt. USAF
 Edw d C. Sve Lt. Comdr. USN

Medical Corps—Continued

Chester S. Svigals Lt Comdr USN	Dua d L W lk Lt Comdr USN
Mrv Tatar Lt Comdr USN	Moff t R Walk t Jt Capt. USAF
G o g e T Tindall Capt USAF	W h i m F Walk t Capt USAF
N rman B Tiv i g ton, Jt Lt Comdr USN	Ern at F W ll e Jt Lt. Comdr USN
Troy H Throw Capt USAF	Elt G Welke Lt Comdr USN
Ralph M. Tunbe lake J Lt Comdr USN	Robert B Whit Lt. Comdr USN
Donald P Todd Lt. Comdr USN	Fredet ck G F W i gand Lt Comdr USN
R hard M To k, Capt USAF	Edw d N Wiggins Lt Comdr USN
J B Tt nt Capt USAF	Gom T Will m Capt USAF
Burto L Tt Capt USAF	P ul A Williams Capt USAF
Robe t L V n Citte Capt USAF	Robert G W William J Lt Comdr USN
Kermit Q Va d nbo Capt USAF	R. L Wils n Capt USAF
Dick L Va Eld k Capt USAF	W rren S W rus Capt USAF
J h H Va s t Capt USAF	Cr ig C Wright Capt USAF
J cob J Varg sb Lt Comdr USN	J ry J Z iello Lt Comdr USN
Joh L Vigo t Lt Comdr USN	W y B Zo k Capt USAF

Dental Corps

J hn G Alley Lt. Comdr USN	J seph J L mb rdt, Capt USAF
Ralph N Alparo Lt Comdr USN	H y w Ly n, Lt. Comdr USN
Roy D A d w Capt USAF	J hn J M A d w Capt USAF
Edw K A kik Capt USAF	J P McLeod Capt USAF
Ll yd M A m t r ng Lt Comd USN	Conn li C M dley Capt USAF
Luk J B m Lt. Comdr USN	R bert D Meye Lt Comdr USN
Roget C. Br yl Capt USAF	Ubald L Montel Lt. Comdr USN
A th y B glo Capt USAF	L gh d Y M s Capt USAF
W C Cald w ll Jt Lt Comdr USN	William J M wet Jt Capt USAF
Cl k A Che y Capt USAF	Ray B Muell Lt. Comd USN
Phil p Ch t Capt USAF	Dwight W N wm Lt Comd USN
A gel D Cl mb Lt. Comd USN	Fr X. P lk Lt. Comdr USN
P ter C. C gl Lt. Comdr USN	Burto H. Press Capt USAF
Wilbur J D kma Capt USAF	B deigh W Que nb ry Capt USAF
Raymond W Dolph Lt Comdr USN	Walt E Rall Lt Comdr USN
L F E k Lt. Comd USN	Robe t G R bb, Lt Comd USN
Ern t En ng Lt. Comdr USN	H ary J Ruff Lt Comdr USN
Edward C. F t z Lt. Comdr USN	Charl s E Sch t Capt USAF
J rom J Fein Capt USAF	William Segal Lt Comdr USN
J hn L Gagliardi Capt USAF	H told R Shi ts Capt USAF
Sa t T G a etto Capt USAF	Arma d M Stell Lt Comdr USN
H be t W G d ng Lt. Comdr USN	R be t A. Ta quist, Capt USAF
P rt t H Gott, Lt Comd USN	Cal B. Th m Lt Comdr USN
R bert L G en Lt Comdr USN	G orge U w Capt USAF
L wi L G th Lt Comdr USN	Edw o E W af ld, Lt Comdr USN
H ld H lp m Lt Comdr USN	Glenn C. Will ms Capt USAF
H ld O H on, Capt USAF	L wre c S W tter Capt USAF
R land A H t t III Capt USAF	Thom s S. Wittma Capt USAF
T ylor W H ll Capt USAF	Will m G Wright Capt USAF
Albert R. k rby Capt USAF	James R Wy tt Capt USAF
Edw rd A k t z Lt Comdr USN	Seym ur H Yale Lt Comdr USN

Medical Service Corps

Jar li D Baier gt Capt USAF	Booth Chilcuss Lt. Comdr USN
J hn A B l g Lt Comdr USN	Thoma J A Dy t Lt Comdr USN
H go B B tstrom, Lt Comdr USN	Fract H Fly n, Lt. Comdr USN
Er t H B wn, Capt USAF	Thomas G Fowl t Lt Comdr USN
Jes C. Br wn, Lt Comdr USN	Matthew F Gall gh t Lt Comdr USN

Medical Service Corps—Continued

Er n G ve Lt Comdr USN	K an h G Sp l r, Capt. USAF
El A G lbault, Lt Comdr USN	Ca ll Sp m Capt. USAF
R ald G H Capt. USAF	Georg W Sp Lt Comdr USN
Ar h R H dg na Lt Comdr USN	L Steph Capt. USAF
R ha d C Hy t, 1st Lt USAF	Edwa d T Soe kl Capt. USAF
R be L J h on Capt. USAF	Donald J Str s 1st Lt USAF
Ralph B J Capt. USAF	R M S k y Lt Comdr USN
William E h lly Lt Comdr USN	S d y W n, Lt Comdr USN
Georg S. L Lt Comdr USN	F ank W Capt. USAF
Rus ll R Lun m J 1st Lt USAF	Lee y D W ley J Capt. USAF
Cha l B M k Lt Comdr USN	Will m F C. Whal n, Lt Comdr USN
G y H M san, Lt Comdr USN	Will C. Wh l t, Capt. USAF
Roy F N l Capt. USAF	D For W k en, 1st Lt USAF
J hn R. P l k Capt. USAF	Orban R Wh t M J USAF
R h d C. R h d n, Lt Comdr USN	Syl H N Zombron Lt Comdr USN

Nurse Corps

Haz l M All n, Capt. USAF	Marga R. h l y Capt. USAF
El M Arm s Capt. USAF	Al P Ling w d Capt. USAF
Ma p A Arm tr r, Capt. USAF	L ui A L c y Capt. USAF
E her P B t, Capt. USAF	Lilla M asbach, Capt. USAF
Gr E. Bl kbw t, Capt. USAF	N na L M ge 1st Lt USAF
Anna T Bl Capt. USAF	Fl N Maa n, 1st Lt USAF
P ul O Bo 1st Lt USAF	R g na H M h, Capt. USAF
Ell J B 1st Lt USAF	N B M w k Capt. USAF
B my V B l 1st Lt USAF	Be ry J Ow n, Capt. USAF
Mary J By Capt. USAF	Do W P yne Capt. USAF
Cath n P Chobo 1st Lt USAF	Natal A P k t, Capt. USAF
A M. Coll Capt. USAF	Alba n J P p l Capt. USAF
Marlyn J Cour d, Capt. USAF	J R P w Capt. USAF
Luc l M Cr n, Capt. USAF	J an C R bl Capt. USAF
Ca dr C. Curry 1st Lt USAF	Ma th C. Ro Capt. USAF
Al ce C. Curt 1st Lt USAF	A u L S ml Capt. USAF
J an l Dobl Capt. USAF	Mary L R S ds Capt. USAF
Virg u A Donah Capt. USAF	Th da Sch 1st Lt USAF
Do by A Dr k 1st Lt USAF	Ma be t a Sch ur Capt. USAF
J L E er Capt. USAF	Emog Sh mill Capt. USAF
Em ly J Flah ry Capt. USAF	Do thy L S g Capt. USAF
N na S. Gl Capt. USAF	Ru A. Stupl n, 1st Lt USAF
El zabeth M. Gort Capt. USAF	Mary y J Swa Capt. USAF
K h E H ml n, Capt. USAF	Fl en E. Thoma Capt. USAF
J y e L. H room, 1st Lt USAF	L M. Th ma Capt. USAF
Eluz beth F Hedgl y Capt. USAF	Jan E. T n, Capt. USAF
Sar E. H ts b l Capt. USAF	Oliv Y v y Capt. USAF
L na M H ym 1st Lt USAF	M tha F W hunt, Capt. USAF
El zabeth A. J bl novsky Capt. USAF	Fl E. Wh Capt. USAF
Alfa Jed zt w k, Capt. USAF	Agnes T Will m Capt. USAF
Sarah M. J H Capt. USAF	H l M. W rth, Capt. USAF
Geor h J Capt. USAF	Beverly F Wright, 1st Lt USAF
Mar T J rda Capt. USAF	J L Y ung Capt. USAF

A MESSAGE FROM THE A M A

Women who are physicians should be liable for military service in the same way as male physicians. This recommendation was proposed by a special committee of the British Medical Association, which recently studied ways and means to make a military medical career in their Armed Forces an attractive alternative to civil practice.

The British Medical Association, a voluntary association of 65,000 doctors reported that the shortage of regular medical officers today is more serious than ever before and the Armed Forces are obviously dependent upon National Service to fill their establishments. Physicians in the United States have been subjected to a discriminatory draft law since June of 1950 to meet military medical requirements. The American Medical Association has repeatedly pointed out the need for an attractive career program for the medical services of the Armed Forces.

The age limit for conscription of doctors in England is age 30 (In the United States, under the "Doctor Draft Law," the age limit for induction of physicians extends to age 51.) The British report points out that by that time it is impossible for a young doctor even if he has completed the necessary postgraduate training to have acquired the skill of a specialist. It was recommended that the age limit be extended to 35. If an individual should so request his recruitment should be deferred up to that age, in order for him to receive further training as a specialist.

The committee noted that it has been many years since sex discrimination of any kind was abolished within the medical profession and there is no professional reason why it should continue with respect to National Service. In fact, the British Medical Women's Federation has long been in favor of conscription of women doctors on the same terms and conditions as for men, it being recognized that those medical women who have assumed family commitments should be entitled to claim exemptions. With this proviso, the committee recommended the conscription of women doctors for National Service.

The study found that remuneration and prospects of military medical officers compare unfavorably with those of other branches of medicine. It was the committee's opinion that remuneration of

From the Council on National Defense of the American Medical Association. The
Washington Post, 1950. Reprinted by permission of the Department of Defense.
—Edw.

military medical officers could most usefully be determined by a comparison with the remuneration of general civilian practitioners making due allowance for the special features of a career in the military. Several factors were offered for consideration which if adopted would tend to equalize the difference in pay between civilian and military physicians.

In 1950 it was recommended that 20 percent should be added to the average general practitioner's remuneration to compensate for these disadvantages. However the increase as established only amounted to from 8 to 10 percent for military medical officers and the new pay revision did not achieve the decided improvement in recruitment. The report indicates that a general civilian practitioner will earn on an average during 32 years of practice £66 848 as compared to £56 720 for the average medical officer in the Armed Forces for a similar period. Spread over a career of 37 years this represents £484 per annum or nearly 26 shillings 6 pence per diem. The committee therefore recommended a uniform increase for all grades of 26 shillings per diem.

The report also recommended that the services of civilian medical practitioners in the United Kingdom should be utilized as much as possible generally on a part-time basis.

A number of the recommendations were similar to the proposals offered by the American Medical Association with respect to medical services in the U. S. Armed Forces.

Other items in the report dealt with (1) specialist pay (2) retired pay and widow's pension (3) additional inducements (4) promotions (5) retiring ages (6) facilities for postgraduate studies (7) training of specialists (8) economy of medical manpower and (9) use of civilian doctors.

THE MEDICAL OFFICER WRITES

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W L. Capt. USAF (MC) d Engel C E. First Lt. USAF (MC) Spl fa
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L dbett R K L (ig) (MSC) USN nd Cumm gs R J U f ep my t
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L dbe g R B L Col MSC USA, W tle T F Newt A. M; MSC USAR
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Lt, MC USAR d Wynn, J H. Cpl AUS B al H l blood tr m K
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L dbe g R B L C I MSC USA W le T F Mac hall J D Cap MSC, USA
N w A M; MSC, USAR, S r w z, J G F L MC, USAR d H w rd J M
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L J Cap (MC) USN Shu l J F Comd (MC) USN Mg l h A L (MC)
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S h ar E W Maj USAF (MC) Bow s, W F Col MC, USA d Sull van, B H
J L C I MC, USA M ppe ga ro tin l h morthag rol f me g cy
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S n R J, Fir L MC USAR d Cr by W H L C L MSC USA H o-
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f ct f ll w g w unding d ta on w th pl ma p od *Ann. Surg* 141
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Sloc m H C. Col MC USA Eff ct f m l p ne be ta *M. Art & Sc*
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(MSC) USN Analys f d hydra l H ct l tra-art ial transfus o. *Am J*
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DEATHS

CALDWELL Clyde W. Jr., Lieutenant Colonel DC USAR. Brockton Massachusetts Headquarters 1277 Service Unit Camp Kilmer New Jersey. Graduated in 1924 from Tufts College Dental School Boston Massachusetts. Appointed a first lieutenant 12 October 1932. Ordered to active duty 5 August 1941. Died 5 May 1955 age 55 at Valley Forge Army Hospital Phoenixville Pennsylvania.

CARR Josephine Kelly. Captain, ANC USA. Millington Maryland, assigned to 9956th Service Unit, Letterman Army Hospital San Francisco California. Graduated in 1933 from Delaware School of Nursing Wilmington Delaware. Appointed a second lieutenant in the Army of the United States 24 November 1940. Commissioned a second lieutenant in the U. S. Army 7 November 1942. Died 8 April 1955 age 42 at Letterman Army Hospital of hypocalcemia.

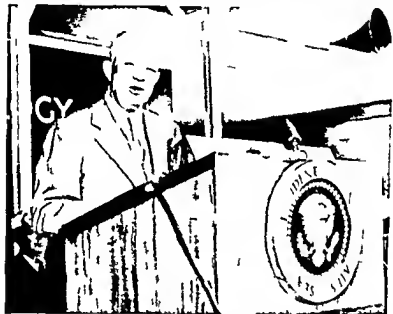
DIPIZZO Daniel Angelo. Lieutenant junior grade (DC) USNR. Elizabeth New Jersey. United States Naval Hospital St. Albans New York. Graduated in 1954 from the St. Louis University School of Dentistry. Appointed lieutenant, junior grade 21 June 1954. Ordered to active duty September 1954. Died 22 May 1955 age 25 at his home of lymphoma.

MESES Thadeus. Captain MC USAR. New York New York. Medical Detachment 841st Engineers Advanced Battalion Beale Air Force Base Santa Ana California, graduated in 1950 from Ludwig-Maximilians-Universität Medizinische Fakultät Munich Germany. Appointed a first lieutenant 3 June 1953. Ordered to active duty 4 January 1955. Died 30 April 1955 age 30 at Bakersfield California, of injuries received in an automobile accident.

PRESIDENT SPEAKS AT AFIP DEDICATION

President Eisenhower was the keynote speaker at the dedication of the new home of the Armed Forces Institute of Pathology on 26 May 1955.

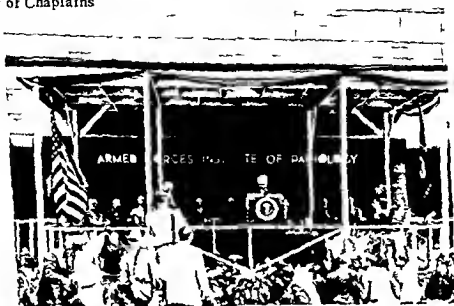
While hundreds of spectators including prominent scientists and government and military officials looked on Secretary of Defense Charles E. Wilson introduced the President who said: "I dedicate this building to the conquest of disease so that mankind more safe and secure in body may more surely advance to a widely shared prosperity and an enduring and just peace."



The Secretary of Defense was introduced by Brig. Gen. Elbert DeCoursey MC, USA, Director of the AFIP, who noted that the Institute is the central pathology laboratory for the Veterans Administration in addition to the three armed services. The Public Health Service and the Atomic Energy Commission, as well as civilian institutions and individuals, are also served by this unique organization.

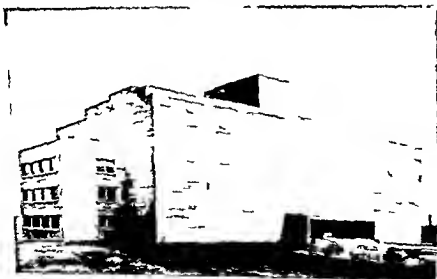
Among those present on the speakers' platform were Maj. Gen. Howard M. C. Snyder MC, USA (Ret.), the President's physician; Maj. Gen. George E. Armstrong MC, USA, retiring Surgeon General of the Army; Rear Adm. Bruce E. Bledley (MC) USN, Deputy Surgeon General of the Navy; Maj. Gen. Dan C. Ogle USAF (MC), Surgeon General, Air Force; Maj. Gen. Leonard D. Heaton MC, USA, Commanding General of Walter Reed Army Medical Center; Capt. William M. Silliphant (MC) USN; and Col. Ralph M. Thompson, USAF (MC), Deputy Directors of the Armed Forces Institute of Pathology.

The invocation was given by Maj Gen Patrick J Ryan USA Chief of Chaplains and the benediction by Rear Adm E B Harp Jr USN Chief of Chaplains



*Secretary of Defense Charles E. Wilson addressing the audience
The President and medical officers are seated on the platform.*

A scientific program opened that evening with an address by Dr Wendell M Stanley a Nobel laureate in chemistry and was followed the next day by sessions presided over by Dr Arnold R Rich, Pro



fessor of Pathology Johns Hopkins University Medical School and Dr. Howard T Karsner Research Advisor to the Surgeon General, U. S. Navy

(The history and organization of the AFIP was recently described in this journal Vol 6, pp 221-231 Feb. 1955)

MAJOR GENERAL SILAS B HAYS APPOINTED ARMY SURGEON GENERAL

Major General Silas B Hays was sworn in as the 30th Surgeon General of the Army on 1 June 1955 succeeding Major General George E. Armstrong who retires in August after more than 30 years of service.

General Hays was born in St Paul Minn 18 February 1902. In 1928 he received the degree of doctor of medicine from the University of Iowa. After serving an Army internship at Letterman Army Hospital he was commissioned First Lieutenant Medical Corps in the Regular Army 1 August 1929.



Major General Silas B. Hays, left, is sworn in as Surgeon General of the Army by Major General John B. Anderson, Third Assistant General of the U. S. Army. The ceremony is held at Washington, D. C. on 1 June 1955.

General Hays is a graduate of the Medical Field Service School and the Army Industrial College. He served two tours of duty with the Supply Division, Office of the Surgeon General, Washington, D. C., and during World War II he was Chief of Medical Supply, European Theater of Operations. In May 1950 he was assigned as Surgeon, U. S. Army Pacific and later as Surgeon, Japan Logistical Command until he became Deputy Surgeon General in August 1951.

He is a member of numerous medical organizations and has been awarded the Legion of Merit, the Legion of Merit with Oak Leaf Cluster, the Croix de Guerre with Palmes, and the Order of Sainte Publique from the Republic of France.

Reviews of Recent Books

PRINCIPLES OF INTERNAL MEDICINE edited by T. R. Harrison, Raymond D. Adams, Paul B. Reeson, William H. Resnik, George W. Thorn, and M. M. Winthrope. 2d edition. 1703 pages illustrated. The Blakiston Co. Inc. New York N. Y. 1954. Price \$16.

Those familiar with the first edition of this book are already aware of the unique and highly desirable method the authors used in the presentation of diseases of internal medicine. They were most successful in integrating pertinent aspects of preclinical sciences with clinical medicine by using modern methods of describing the mechanisms and physiologic and structural abnormalities as they relate to disease.

This edition has retained the general arrangement of the first edition presenting in order the cardinal manifestations, mechanisms, specific infections and infestations and finally the diseases of the organ systems. Each chapter has been revised or rewritten. Two new sections enhance the value of this text. One is a section of 15 chapters on disorders of nervous function containing material that is not readily available to most students. Another concerns the care of the patient to which general principles of therapy have been grouped together. They deal with such problems as sedation, control of pain, nutrition, shock, fluid and electrolyte therapy, the comatose patient and other conditions which may be observed in many seriously ill patients regardless of the diagnosis.

This volume is encyclopedic in scope and of necessity does not include details on many subjects. Attention is given to the more common conditions. The bibliography is not extensive but adequate and the charts and illustrations are excellent.

This book should become indispensable to medical students, postgraduate students of internal medicine, and practicing physicians as a ready reference to diseases and their various manifestations. It is lighter and easier to handle than the first edition even though it contains an additional 150 pages.—DOSSO LYN I. COL. MC. USA

THE YEAR BOOK OF DRUG THERAPY (1954-1955 Year Book Series) edited by Harry Beckman, M. D. 592 pages illustrated. The Year Book Publishers, Inc. Chicago, Ill. 1955. Price \$6.

This book reviews the important contributions of therapy in the various fields of medicine. From many medical journals published throughout the world during the period of August 1953 to August 1954, important articles which bring out new ideas of treatment have been abstracted.

The editor in his preliminary introduction provides an excellent and all review of the scope of the book. This is not only a valuable reference

into the various fields of medicine he reviews the important contributions adding his own pertinent remarks as footnotes to many of the articles. By listing the source and author of each article the editor enables the reader to refer to the original article should the full details be desired.

In addition the subject of antibiotics and sulfonamides is thoroughly reviewed. Considering the volume of literature published on this subject alone and the numerous new antibiotics available for use the reader is given an excellent summary of this subject.

For the busy practitioner whether or not he is a specialist whose time for reviewing current literature is limited this book provides a most valuable source of information as to current treatment in a concise condensed form. Although subject to some criticisms as to what is considered important the author must be congratulated on the excellent selection of articles. The various illustrations charts and graphs add materially to the value of the book and make it ideal for quick reference and one that should be in every practitioner's library.

—DANIEL J. WALIGORA Col MC USA

CLINICAL DIAGNOSIS by Elm G. W. & J. Id M. D. F. A. C. P. 1611
p. 8 135 Illustration Appl on-C. C. & C. Co. N. Y. N. Y. 1955 Pr. \$22.50

From his extensive clinical experience the author presents the tested technique and diagnostic method used at the Mayo Clinic. Because of the broadness of the subject matter the book is divided into three sections covering regional diagnosis, the systemic diseases and the body as a whole. This increases the usefulness of the book by permitting easier reference to the topographic area or system involved.

In each section conditions are discussed succinctly for the clinical diagnosis. Normal as well as abnormal clinical findings are described in adequate detail. Techniques used by specialists such as endoscopy and special laboratory determinations and complete differential diagnosis are not included. The author states in the preface that a physician can make the diagnosis in 7 out of 10 cases by use of his own senses and experience aided, if necessary, by reference to this book and that the diagnosis in the other three cases depends on techniques used by specialists.

This is just the book needed to supplement standard textbooks of internal medicine because use with its use the diagnosis in most patients can be made without resorting to endoscopy roentgenology or special laboratory determinations.

The book is written in a clear concise and easily readable style. The illustrations are good and suitable references are given at the end of each chapter. Although the diagnostic criteria of common as well as uncommon diseases are included careful indexing makes this an invaluable reference book for the intern resident and practicing physician.—PATRICK J. SHANE, Col MC USA

Christopher's MINOR SURGERY edited by Alton Ochsner M D and Michael E DeBakey M D 7th edition 547 pages illustrated W B Saunders Co Philadelphia Pa 1955 Price \$9

The editors and 21 contributors have given us a new Christopher's *Minor Surgery*. Those familiar with the sixth edition printed seven years ago will not recognize this new product as their old friend. The present work is one half the size of the old is the product of many contributors representing different surgical specialties but with similar academic backgrounds and is organized in an almost completely different fashion than the older edition.

The material is grouped according to systems and each has subdivisions representing the various categories of conditions.

Though the problem of definition still is not solved to everyone's satisfaction the editors state it is surgical therapy of lesions offering little or no potential threat to life and which may be treated with the patient on an ambulant status. Most contributors limit their presentations to minor surgery. In the section addressed to The Surgical Resident a wise analysis of and fine approach to the code of behavior and position of the student surgeon is made. This section alone would make the book worth while to a resident and young physician.

Excellent technical descriptions of examination of the rectum handling of mechanical injuries and thermal injuries (though without reference to the work done at Brooke Army Hospital) and diagnosis of peripheral venous diseases are found. Infections are considered with such completeness that rather uncommon surgical problems such as leprosy anthrax and others are included.

By and large the volume is a good one an improvement over the older editions a fair reference work for office practice and good for the student and resident. It is a valuable work for any physician's library and should take a place with other standard texts.

—DON S WENGER Col. USAF (MC)

CURRENT THERAPY 1955 edited by Howard F Conn M D 692 pages W B Saunders Co Philadelphia Pa 1955 Price \$11

This new volume is one of the best publications on current therapy. It contains information on the latest approved methods of treatment for the practicing physician. The objective of the author has been to bring to the physician information necessary to the complete management of the patient.

The material is presented in well organized sections covering diseases of various systems. The index is excellent. The description of treatment is narrative in form and is clearly presented. Consultants and contributors to this publication are in most instances well known for their ability and outstanding work in their fields of special interest which lends additional credence and reliability to the contents of this book.

For some diseases the methods of treatment of more than one clinician are described and usually represent different views of therapy premised on different concepts of the disease. The views expressed by the contributors are presented by the author in an unbiased manner.

As a ready reference it is one of the best volumes of its kind that has been published recently. It will be well received by both the general practitioner and specialist alike as being of material assistance in their practice.—CHARLES T. YOUNG Col. MC USA

MODERN OCCUPATIONAL MEDICINE edited by A. F. FLEMING M. S. M. O.
d. C. A. D. A. I. M. D. 414 p. 64 ill. trans. 2 1 r. 32
tabl. L. & F. b. g. Phil. d. lph. P. 1954 Pr. \$10

Among the 20 contributors to this book are 12 physicians including medical administrators, psychiatrists, and a surgeon, also contributing are a toxicologist, an industrial hygienist, a nurse, a nutritionist, a physicist, a safety engineer, and a lawyer. The breadth of the coverage of the subject of occupational medicine is matched by its thoroughness and authenticity. Particularly stimulating are the forthright questions in the first chapter. The Evaluation of Medical Services in Industry asked of the plant physician. Equally searching questions are addressed to the plant manager both to give him a yardstick for evaluating his medical program and to indicate the support he must give his medical department in terms of staff, equipment, supplies, and stature in order to ensure its maximum effectiveness. In setting the standard for the staffing and equipping of the medical department, the authors recommend a ratio of one full-time physician per 1,000 employees, which would appear a bit high for most nonchemical industries. Conversely, and surprisingly, their ratio of one full-time nurse for a group of from 300 to 800 employees is lower than that generally recommended for industry. The ratio of physicians to employees and the list of equipment recommended by the authors, e.g., basal metabolism and diathermy equipment for plants with as few as 1,000 employees, imply a belief that industrial medical departments should render services particularly diagnostic services beyond the scope recommended in the Guiding Principles of Occupational Medicine issued by the Council on Industrial Health of the American Medical Association.

A most lucid and helpful exposition of the practical application of psychiatry to industry is given, which appropriately ends with the statement, effective discipline promotes mental health. Through the disciplines of chemistry, physics, radiology, ophthalmology, otology, toxicology, physiology, psychology, biostatistics, and engineering, the groundwork is laid to permit the elaboration of rational measures for the prevention, detection, diagnosis, and treatment of mental and physical organic and functional occupational illness, and to permit the determination of the proper scope and procedures of medical examinations for detecting the earliest manifestations of such illness and pointing the way to corrective action. The value of the book to the plant physician would have been enhanced had the authors, after laying the ground

work included a detailed schedule of medical examinations for employees exposed in their work to each of the several substances and influences capable of impairing health. Likewise helpful to the plant physician would have been a critical examination of and guidance with respect to certain practices of dubious merit carried on by some industrial dispensaries such as the routine physical checking of all employees returning to work after being absent on sick leave and the operation of a visiting nurse service.

The book is well organized, indexed and illustrated. The bibliography is extensive with references to what appears to be the most authoritative literature. In my opinion it is the most complete, authentic, helpful and practical book that has appeared in the broad field of occupational medicine. It should be available to all who are engaged in or concerned with this field.—B. DIXON HOLLAND, Col. MC USA.

NORMAL LABOR by Leroy A. Calkins, M.D., Ph.D., American Lecture Series, Publication Number 246. A Monograph in American Lectures in Gynecology and Obstetrics. Edited by E. C. Hamblen, M.D., F.A.C.S. 128 pages, illustrated. Charles C. Thomas, Publisher, Springfield, Ill. 1955. Price \$4.

This monograph is a collection of papers, each of which deals with a facet of obstetrics that has long been controversial. It is not intended as a textbook but rather as collateral reading for those advanced in experience and knowledge of obstetrics. The book is written from the vantage point of some 30 years of rich experience and careful observation by an author who has evaluated the currently accepted methods and without hesitation given his opinion as to their value. This opinion is backed by carefully kept records of cases sufficient in number to cause critics to be slow in contradiction.

Interwoven through this discussion, are the author's own proved and adopted methods as well as those used in other well known clinics. Criticisms of techniques (his own as well as others) are freely given as well as reasons for the criticisms. The point is made that we have not yet learned everything about obstetrics and that our statistics are not yet perfect.

There is a detailed set of tables and methods to be used in predicting the length of labor by stages. This is rather a simple form of predicting length of labor and well worth the specialist's careful study and use. Whether the average general practitioner would use it in his practice is subject to question. The final essay on the management of the third stage of labor is well worth reading by anyone doing obstetrics whether in large clinics or in the hinterlands.

This small book is well organized, readable and sure to be intensely interesting to obstetricians. Reflecting long years of study and careful evaluation of adequate records, it gives the reader the benefit of an excellent teacher's experience.—ROY W. TAYLOR, Sr., Comd. (MC) USN.

A PRACTICAL MANUAL OF DISEASES OF THE CHEST by M Davidson
 M D 4th edition Oxford Medical Publications 647 pages Illustrated
 Oxford University Press New York N Y 1954 Price \$19.25

During the past decade the advent and almost universal application of antibiotics has all but transformed the medico-surgical approach to pulmonary disorders. The clinical picture of many lung diseases has been so greatly modified that the doctor who stood still for the past 20 years would find himself entirely unfamiliar with modern concepts of altered physiology and their therapeutic implications.

This fourth edition of Davidson's celebrated account of fundamental principles presents an extensive revision of clinical concepts of pulmonary diseases in the light of modern chemotherapy but there appear to be two rather glaring deficiencies. First the treatment of the anatomy physiology and chemistry of the respiratory mechanism is too sketchy and ephemeral. Second throughout the extensive description of clinicopathologic aspects of diseases of the chest, the majority of references hark back to 15 or 20 years ago. In a sense then the author has presented an unusually thorough treatise on thoracic medicine based primarily on an extraordinary clinical experience over the past quarter of a century. His practical concepts are sound and conservative since they are based on clinical trial and error yet by the same token they all but ignore the advent of recent advances in physiology. One looks in vain for any mention of pulmonary function tests for an adequate discussion of pulmonary insufficiency for standardization of definitions and symbols in respiratory physiology and for an accurate presentation of the normal and abnormal functions of the lung.

If the correlation and interdependence of altered physiology and clinical disease states were emphasized this treatise would be outstanding as a shining example of the axiom. The physiology of today is the medicine of tomorrow. —CHRISTOPHER C SHAW Capt (MC) USN

SURGERY OF THE ADRENAL GLANDS by William Wallace Scott M D
 PhD and Perry B Hudson, M D American Lecturer in Abdominal
 Surgery Number 227 American Surgical Society Lecture in Abdominal
 Surgery edited by L. T. R. D. G. T. M. D. 150 pages Illustrated
 Charles C Thomas Publisher Springfield Ill 1954 Price \$3.50

Modern concepts of normal and abnormal adrenal function are still in a state of flux and many surgical procedures are awaiting the test of time before acceptance. This monograph presents a good review of present-day opinions regarding surgically amenable lesions of the adrenal glands. Controversial viewpoints are not discussed but the reader is referred frequently to the excellent bibliography that accompanies the monograph.

The first three chapters deal with the development structure and function of the adrenal glands. That on function is illustrative of the present-day confusion of the subject but some effort is made toward simplification. The rest of the volume is devoted to tumors of the adre-

nals using both anatomic and functional classifications. All illustrated case histories are presented to describe each type. Surgical procedures are discussed with brief comments on bilateral adrenalectomy in the treatment of disseminated cancer of the prostate and breast.

This monograph is well written and is recommended reading for both internists and surgeons.—LEWIS L. HAYNES *Comdr (MC) USN*

ANTIBIOTICS AND ANTIBIOTIC THERAPY by Allen E. Hussar M.D. and Howard L. Holley M.D. 475 pages. The Macmillan Co. New York N.Y. 1954. Price \$6.

This book is a compilation of information about the various antibiotics in clinical use and is divided into three sections: the fundamentals of antibiotic therapy, a description of each antibiotic, and the treatment with antibiotics of various diseases. This results in considerable repetition but is necessary for its use as a reference.

The first section contains much interesting information on the possible mode of action of antibiotics but the sum total only shows the truth not yet revealed. The second section discusses individual antibiotics, dosages, toxicity, and reactions. The third section may cause many readers to disagree with the authors who seem much more optimistic about the use of antibiotics in certain diseases than does the reviewer.

There are inconsistencies in advocating combinations of aureomycin (page 298) and penicillin but later (page 306) stating they are antagonistic. It is interesting that the first of these drugs to be put to common use is still the most useful.—JAMES L. TOBIN *Col USAF (MC)*

A CIBA FOUNDATION SYMPOSIUM ON THE KIDNEY edited by A. A. G. Lewis M.D. and G. E. W. Wolstenholme M.B. 333 pages with 125 illustrations. Little Brown & Co. Boston, Mass. 1954. Price \$6.75.

This small volume records the full verbatim proceedings of an international symposium in London under the auspices of the Ciba Foundation. The subject matter is discussed in five general parts: structural and functional relationships in the kidney, tubular functions other than the regulation of acid base balance, renal share in the regulation of acid base balance, volume control of body fluid, and general problems of electrolyte excretion. The book contains 20 articles and each one has its own bibliography. There are many illustrations and charts of high caliber. Indexing is adequate, the quality of the printing is pleasing, and the volume is well bound.

This publication's objective is to make available throughout the world the proceedings of this symposium which was necessarily restricted in membership. A wealth of valuable material is presented which will be informative and stimulating to all interested in the kidney in health and disease. This book has limited clinical application at the present, however, it informs the reader of the varied and complicated measures and methods which are being carried out in investigation of the kidney.—CLARENCE B. HEWITT *Lt Col MC USA*

ANIMAL AGENTS AND VECTORS OF HUMAN DISEASE by E ne t C rr ll
 F st Ph D 660 page 216 ll tr u s d 9 plate 1 in col
 12 tabl L & F b ge Philad lph P 1955 Pr c \$9 75

The author well known in the fields of parasitology and tropical medicine was among the first in America to offer a parasitologic text that was accepted and used widely by the medical as well as by the zoological professions. This new book is presented in the clear and well-organized style characteristic of his previous works. Although emphasis is on parasites consideration is given to all of the common so-called animal agents that cause disease in man. These range from the viruses rickettsias protozoa and helminth parasites found within man to the various arthropods leeches poisonous mollusks and dangerous fishes and reptiles which may have venenating or more serious effects upon man.

The over all value of the book is greatly enhanced by synoptic tables th t give the reader immediate access to a volume of pertinent information. Students interested in the more basic aspects of parasitic diseases will find tables giving taxonomic groupings of the agents of disease means by which they are tr nsmitted vectors involved reservoir h sts et cet ra all of which contribute to an understanding of the epidemiology of the diseases in concern. Cle r line drawings ch rts and photographs illustrate various aspects of infection. The physician will find accurate descriptions of all the common parasitic diseases and tables that clearly present the p thologic effects and clinical manifestations produced by each organ m. Appropriate attention also is given to the contr l and preve tion of disease. Each chapter ends with a summary and bibliography which permit the reader to grasp at a glance the highlights stressed for given subjects and list the more important and relevant references from the literature.

This book covers the etiology epidemiology symptomatology treatment and control of diseases resulting from infection by animal parasites. It is highly recommended for use by parasitologist pathologists practicing physicians and workers in preventive medicine.

—ROBERT E KUNTZ Lt C mdr (MSC) USN

REGIONAL ALLERGY of th U t d St t Ca d M co d C b d t d
 by M S mt M D and O e C Durham Am n Lect Set
 P bl cati Numb 224 A M g ph th B nn t D st f
 Am c L tu n All gy d t d by M S mt M D 395 p g
 ll t d Ch l C Th m s P bli h Sp gf ld Ill 1955 P
 \$8 50

This book provides much needed reference especially in an allergy clinic where inquir es are often m de as to whether or not cert n chil dren or patients would do better in other sections of the country. Taking in ll the sections of the United States as well as Cub Mexico and Canada and written by outstanding allergists in e ch p ticular secti n of the country it would come in very l ndy in any allergy s office. The different conditions existing in these areas they would affect n

allergy patient are discussed memorably. Yet only are the geographic pollen count and fungi counts given, but also a résumé of each area including the social structure, the particular business conducted in the area and whether or not there is any outward manifestation of smoke or smog and a short introduction on the geography and natural resources of the particular area concerned.

I found the book very interesting, believe it will be very useful and recommend it highly especially to any allergist whose patients travel to other areas of the country either of necessity or for pleasure. It would be especially useful at a military installation, where because of transfers frequent inquiries are made about conditions at new stations.—ARTHUR J. BERGER, Lt. Col., MC, US.

ORAL PATHOLOGY by Kurt F. Thoma, D. M. D. 4th edition. 1336 pages with 1594 illustrations including 92 in color. The C. V. Mosby Co. St. Louis, Mo., 1954. Price \$22.50.

This is the fourth edition of a well-established volume in the field of oral pathology. The most noticeable revision is the deletion of the chapter on experimental pathology. The important segments of this chapter have been placed in appropriate positions in the remaining text.

The format and style are essentially the same and there is some expansion to incorporate recent information. The illustrations abundantly used are well chosen. The discussion of odontogenic tumors is excellent as is the reference to odontogenic cysts. The text is encyclopedic in scope and will be a welcome addition to the libraries of oral surgeons, general pathologists, oral pathologists and otolaryngologists.

This book has no equal as a reference book in oral pathology. The author's approach to many of the pathologic entities seems to be primarily that of a clinician rather than a pathologist, which should increase the usefulness of the work. One of the great merits of this book is the vast bibliography which has been revised in this edition to include recent publications.—JOSEPH L. BERNIER, Col. DC, USA.

BLOOD GROUPS IN MAN by R. P. Pace, Ph. D. and Ruth Sanger, Ph. D. 2d edition. 400 pages. Illustrated. Charles C. Thomas, Publisher, Springfield, Ill., 1954. Price \$7.50.

The first edition of this work, published in 1950, was acclaimed at the Third Congress of the International Society of Hematology in Cambridge University. Prior to that time no book on this subject had been so complete, so carefully documented and so well written.

The new edition will be welcomed with the same friendliness that was shown the older one. The book has been thoroughly revised. The 100 pages added represent the great amount of work that has been done in the field of human blood groups during the past four years. The format remains the same. Each blood group system is discussed in the

order of its discovery and a chapter has been added on the new ninth blood group system Kidd. There are also chapters on blood groups and linkage and methods used in blood grouping. Much of the expansion has taken place in the important chapters devoted to the ABO and Rh blood group systems.

The development of the human blood group systems is at the present time an intensely dynamic subject. It is well known that conflicts regarding the interpretation of data have developed. It may be many years before these conflicts can be resolved. Not least among the merits of this book is the fair and dispassionate manner with which the authors have dealt with these disputes. One hopes that their example may be emulated. —WILLIAM H. CROSBY, Lt. Col. MC USA

THE YEAR BOOK OF RADIOLOGY (1954-1955 Year Book Series) Radiology
Diagnosed and edited by Job, Floyd H. Little, M.D., and F. J. Hadg
M.D. Radiology. Edited by Harold W. J. M.D. and Mort
M. Algerman, M.D. 432 pages. Illustrated. The Year Book Publishers
In Chicago, Ill. 1954. Pp. \$9.

This yearbook has two sections. The abstracts of articles in the radiologic diagnosis section are concise and well chosen. Many are accompanied by excellent photographs. The editors, as usual, often add worthwhile comment. The chapters on the chest and gastrointestinal tract are extensive and represent an excellent review of the literature. The section on radiotherapy presents interesting articles on the use of x-ray, radium, and radioactivity isotopes in both malignant and nonmalignant lesions and includes brief chapters on physical dosimetry, treatment techniques, hazards, injuries, and radiobiology.

The editors are to be complimented for the excellent preparation of this book. It will be a valuable addition to every radiologist's library. —R. J. HEALY, Col. MC USA

A TEXT BOOK OF MEDICINE FOR NURSES by E. Noble Chamberlain, M.D.
492 pages. Illustrated. 6th edition. Oxford University Press, New York.
N.Y. 1954. Pp. \$7.50.

This excellent compilation of information relating body structure and function in care of patients with common diseases was written for nurses and emphasizes the nursing aspects of medicine. It is also a valuable reference for graduate nurses who need a review or nurses studying for state board examinations. The summary of acute infections listing causes, symptoms, and treatment serves as a study guide as well as a quick reference. Few texts contain such correlation of diet and drug therapy in conjunction with physiology.

All illustrative material was carefully selected. Illustrations clearly emphasize various points and greatly enhance the value of the text.

The author fulfills the need for such a publication for nurses and has put forth a great deal of effort in compiling the material to satisfy needs of both student and graduate nurses.

—ANN M. WITCZAK, Major, ANC USA

THE MANAGEMENT OF ENDOCRINE DISORDERS OF MENSTRUATION AND FERTILITY by *Georgeanna Seegar Jones* M D American Lecture Series Publication Number 206 A Monograph in The Bannerstone Division of American Lectures in Endocrinology edited by *Willard O Thompson* M D 198 pages illustrated Charles C Thomas Publisher Springfield Ill 1954 Price \$5.75

This book is written for medical students as well as for the specialist or practitioner and is intended as a fully informative discussion of all the theories and possibilities of endocrine functions and disorders. It presents in a clear concise manner the terminology and chemical composition of the hormones describing methods of assay and physiologic functions. There is a brief summary at the end of most of the chapters.

The first three chapters are perhaps the most valuable in the book although the last chapter is an excellent review of hydatidiform mole and choriocarcinoma. There is an excellent bibliography and index.

The author is to be congratulated on using a terminology which is in general more explanatory of the function of the hormone and less confusing than is the case with many other works on the subject.

This is a well written book on the gynecologic hormones by an author who has a thorough understanding of the subject and who realizes that too detailed a work would in all probability be out of date before it came off the press. The book is recommended as a necessity for the library of all those interested in this subject.

—PAUL PETERSON *Capt. (MC) USN*

PEDIATRIC DIAGNOSIS by *Morris G. en, M D* and *Julius B. Richmond* M D 436 pages W B Saunders Co Philadelphia Pa 1954

This book presents an entirely new and interesting approach to the pediatric patient when compared with the usual texts. A disease entity is not discussed as such rather signs and symptoms of disease as well as expected normal findings at various levels of growth and development are considered. The introduction includes a section on history taking which reveals the author's orientation in the psychiatric techniques of obtaining significant information by indirect means. The section on signs and symptoms is the heart of the book and concerns indications of disease of every body part and system. By design the book does not contain all information concerning a certain disease however extensive references have been incorporated in the body of the text. The section on physical examination describes normal findings and clearly indicates the significance of pathologic signs. The final section on preventive pediatrics is in accord with the other sections in integrating the physical, psychologic and social aspects of child care.

The undergraduate student probably will not find this book satisfactory to his needs however the postgraduate practitioner of pediatrics will find it interesting and broadening and helpful in developing his approach to the child as a whole. —OGDEN C. BRUTOV *Col. MC, USA*

BONE An Introduction to the Physiology of Skeletal Tissue by F. Kell C. M. L. Ph.D. M.D. and M. B. H. R. U. S. M. D. 182 pages. Illustrations. Third Edition. Chicago: P. H. C. Co. 1955. Price \$6.

The authors consider bone as living tissue with a dynamic relationship to the fluid compartments of the body rather than as merely a supporting structure. The text is well organized starting with a concise description of bone tissue and a brief but thorough discussion of its histogenesis. A firm foundation is laid with clear definitions and a presentation of the terminology used in the recent literature. Following in sequence are chapters on structure and chemical composition of bone matrix chemistry and crystal structure of bone mineral and dynamics of calcification. The status of present knowledge of the part played by enzymes in the metabolism of both organic and mineral components of bone is summarized although more questions are raised than answered. Similarly the direct and indirect effects on bone physiology of the various hormones are shown to be poorly understood and the need for further investigation in this field is made clear.

One chapter is devoted to the metabolism of radioactive elements as related to the skeleton and includes a table summarizing information on those fission products with known affinity for bone. Another useful table shows the number of days some of these isotopes are retained in bone.

The chapters on postfetal osteogenesis and healing of fractures explain clearly the means by which osteogenetic potency exists in connective tissue in sites other than bone and the way in which the factors involved in osteogenesis operate in the healing of fractures. The pathologic physiology of bone is briefly and competently discussed in the final chapter.

This book should provide interesting and informative reading for general practitioners internists surgeons and medical students and should certainly be thought provoking for the orthopedist and physiologist.—HAROLD E. SHUEY, LL.C., L.M.C., USA.

THE DISTRIBUTION OF THE HUMAN BLOOD GROUPS by A. E. M. U. S. D. M. 438 pages. Illustrations. Chicago: C. Thomas Publisher. Springfield. Ill. 1954. Price \$8.75.

Deriving anthropologic and genetic interpretations from the extensive world wide knowledge of blood groupings this work develops the demographic usefulness of inherited blood factors. It fulfills the author's objective to bring together as much as possible of the information given by the blood groups on the relationships between the different divisions of the human race.

The first part of the text describes the principal characteristics of the nine most significant systems of blood grouping from the ABO series through the Rh to the less known or less constant P, Lutheran, Kell, Duffy and other systems. In addition other genetic character

isues are introduced such as the various types of hemoglobin (A, C, D, E, G, and S), and the abilities to taste phenylthiocarbamide and to smell hydrocyanic acid.

The topographic distribution of the various blood types of the several systems is covered in seven chapters. A few examples are the high incidence of the B gene in people of eastern Europe, the absence of B in all American Indians (but not Eskimos) and of A as well in South Americans, and the low frequency of the M and the high incidence of the Duffy (Fy^a) gene among the Lapps of northern Scandinavia. Finally the blood groupings of tissue specimens of animals are discussed and instructions for collection of samples are given. Perhaps most interesting are the chapters "An Attempt at a Synthesis" with its suggestions for future research and "Some Recent Discoveries" which brings the reader up to date. Medical interest is stimulated by mention of the proved increased susceptibility to carcinoma of the stomach by persons with group A over those of group O and the presumed resistance to malaria of persons with the sickle trait or thalassemia.

There is a bibliography of 1716 references and five maps of the world and four of Europe showing the areas of distribution of the various blood group genes. Percentage incidences of the various genes in literally thousands of persons tested from all portions of the world are provided in 40 tables. There are topographic and zoologic indexes to the bibliography in addition to the general index to the text.

The book is readable, contains vast reference information and is a tribute to this relatively new field in anthropologic research.

—ROBERT L. CAVERNAUGH Lt. Col. MC USA

PRACTICAL MANAGEMENT OF DISORDERS OF THE LIVER, PANCREAS AND BILIARY TRACT by John Russell Twiss, M.D., Elliot Oppenheimer, M.D. and contributors. 653 pages, 136 illustrations and 7 plates, 3 in color, 48 tables. Lea & Febiger, Philadelphia, Pa. 1955. Price \$15.

This book, as presented by the authors, represents the outgrowth of years of inquiry on problems concerning sundry disturbances of the upper digestive tract. The aim has been to present briefly and concisely information which is applicable to everyday medical problems. Certain subjects are discussed in more detail than are others; this is especially true of those wherein the author's experience has been particularly wide or where information is not generally available in other textbooks.

The book is divided into four sections and an appendix. The 2 chapters contain much cross reference within the book. Throughout each chapter, methods of investigation and diagnosis are discussed and evaluated. Useful charts of differential diagnoses are used and applicable, especially in diagnosis of diseases of the liver. Emphasis throughout is on medical diagnosis and treatment. The signs and symptoms of the conditions discussed are considered in relation to the

indication for and results obtained by surgical intervention rather than a description of operative procedures. Instructions on cholecystography, cholangiography, needle biopsy and other diagnostic and laboratory tests as well as therapeutic diet are included in the final section.

The book is complete with an extensive bibliography and may serve as a handbook and reference book for general practitioner, internists, gastroenterologist and surgeons on the subject covered.

—WILLIAM S. GEORGE, C I MC USA

GRAY'S ANATOMY OF THE HUMAN BODY by Henry Gray, F.R.S. 26th edition, edited by Charles J. Mayo, G. M. D. 1480 pages, 1202 illustrations, mostly in color. Lea & Febiger, Philadelphia, Pa. 1954. \$16.

This latest revision of the dean of anatomy textbooks might well have been brought out a century edition for 1958 will mark the passage of 100 years since young Henry Gray first published his *Anatomy*. That original edition contained 750 pages with 363 figures as compared with the 1480 pages and 1202 illustrations of the present volume. More significant than the doubling in size and content however is the improved method of presentation now employed. In this respect the twenty-sixth edition is notably better than even its immediate predecessor of six years ago.

A major advance appears in the rewritten chapter on the peripheral nervous system which has been expanded to the extent of an extra 28 pages. A convenient new outline of the cranial nerves has been added as well as dermatome charts of the upper and lower extremities. In this one chapter 15 illustrations in color from Tondury, *Angewandte und topographische Anatomie* have been substituted for less clearly executed figures formerly used. The autonomic nervous system is particularly well described in this edition except that in deciding to restrict the term sympathetic to the thoracolumbar division of the visceral efferent system the editor has not in some spots fully revised his terminology accordingly. This minor flaw undoubtedly will be remedied in the next printing.

Throughout the book other improvements are noted. Embryology is described concisely and more exclusively from human material. Surface anatomy oriented toward physical diagnosis appears as the second chapter. A number of diagrams of microscopical anatomy have been replaced by drawings of organs or sections magnified only five times. Finally there are now many bibliographic references supporting statements in the text in addition to an ample list at the end of each chapter of other reference for collateral reading.

This latest revision of a time honored text should even more than all previous editions maintain and augment the popularity long enjoyed by *Gray's Anatomy*. —B. F. AVERY, Capt (MC) USN

New Books Received

Book received by the *U S Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be selected for review in a later issue.

- THE THERAPY OF SKIN TUBERCULOSIS** by *Gustav Riehl* M O and *Oswald Köpf* M O Translated and revised by *Ernest A. Stakosch* M O Ph O American Lecture Series Publication Number 229 A Monograph in The Bannerstone Division of American Lectures in Dermatology edited by *Arthur C. Curtis* M O 247 pages illustrated Charles C Thomas Publisher Springfield Ill 1955 Price \$6.75
- STUDIES ON FERTILITY** Including papers read at the Conference of the Society for the Study of Fertility London 1954 Being Volume VI of the Proceedings of the Society edited by *R. G. Harrison* M A O M 151 pages illustrated Charles C Thomas Publisher Springfield Ill 1954 Price \$4.25
- HUMAN ANCESTRY** A Primer of Human Phylogeny by *W. C. Osman Hill* M O F R S E 194 pages illustrated Charles C Thomas Publisher Springfield Ill 1953 Price \$4.25
- THE HYPOPHYSEAL GROWTH HORMONE NATURE AND ACTIONS** International Symposium sponsored by the Henry Ford Hospital and Edsel B. Ford Institute for Medical Research Detroit Mich., and held at the Hospital October 27-28-29 1954 Editors *Richmond W. Smith* J M D Oliv *H. Gaebler* M O and *C. N. H. Long* M O 576 pages illustrated The Blakiston Division McGraw Hill Book Co Inc New York N Y 1955 Price \$12
- BONE AND JOINT X RAY DIAGNOSIS** by *Max Rizzo* M O 752 pages 568 illustrations on 398 engravings Lea & Febiger Philadelphia Pa 1955 Price \$20
- NEUROPHARMACOLOGY** Transactions of the First Conference May 26-27 and 28 1954 Princeton N J edited by *Harold A. Abramson* M O Sponsored by the Josiah Macy Jr Foundation New York N Y 210 pages illustrated Printed by Madison Printing Co Madison N J 1955 Price \$4.25
- PHYSICIANS OFFICE ATTENDANTS MANUAL** Section for Office Work by *Henry B. Gotten* M O Section for Laboratory Work by *Douglas H. Spunt* M O 93 pages illustrated Charles C Thomas Publisher Springfield Ill 1955 Price \$3.75
- CARDIAC AUSCULTATION** Including Audio Visual Principles by *J. Scott Butt* M O *Mauroice R. Chassin* M O and *Robert McGaith* M D 111 pages 54 illustrations Grune & Stratton Inc New York N Y 1955 Price \$4.50
- PRACTICAL MEDICAL MYCOLOGY** by *Edmund L. Kenney* A B M D American Lecture Series Publication Number 248 A Monograph in American Lectures in Internal Medicine Edited by *Robert L. Pullen* A B M O F A C P 145 pages illustrated Charles C Thomas Publisher Springfield Ill 1955 Price \$4.50

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2d edition 128 pages illustrated Published by Max Parrish & Co
Ltd London 1954 Distributed by Track & Field News Los Altos
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- ANNALS OF THE NEW YORK ACADEMY OF SCIENCES** Volume 59 Art 5
Leukocytic Functions by *Albert S Gordon*, et al Editor *Roy Waldo
Minor* Pages 665 1070 illustrated The New York Academy of Sciences
New York N Y March 24 1955 Price \$4 50
- CEREBRAL VASCULAR DISEASES**, Transactions of a Conference Held under
the Auspices of The American Heart Association Princeton N J
January 24 26 1954 *Irving S Wright*, Chairman *E Hugh Luckey* Editor
167 page Published for The American Heart Association by Grune &
Stratton New York N Y 1955 Price \$5 50
- ANCIENT THERAPEUTIC ARTS** The Fitzpatrick Lectures delivered in 1950
and 1951 at the Royal College of Physicians by *William Bockbank
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Thomas Publisher Springfield Ill 1954 Price \$5
- EVALUATION IN MENTAL HEALTH** A Review of the Problem of Evaluating
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Lancet 2 621-624 Nov 11 1944

Cabot R C Pernicious and secondary anemia chlorosis, and leukemia
In Osler W (editor) *Modern Medicine* 3d edition Lea & Febiger
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(See inside back cover)

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Monthly Message

The suggestion appeared recently in the *Journal of Medical Education* that it might be possible for deans and department heads to request deferment from military service for young men who showed promise in teaching and research in the basic sciences. This is an unrealistic attitude and I direct your attention to an article in this Journal on military medical research.

The Medical Task Force of the Hoover Commission has recommended

Each of the three military departments maintain a medical center the components of which should be a hospital a center for postgraduate education and military medicine and a research institute occupied with medical problems identified with the primary mission of the department.

There is great opportunity for research in the three military departments; this research is unique to the military and much of this cannot be accomplished in our medical schools and teaching hospital centers. Those areas include human engineering, the physiological problems in aviation and submarine medicine and problems of deceleration and escape from high performance aircraft. The young man with capability for research is not retarded by his two-year exposure to the military; frequently his horizons and imagination will be greatly extended and his civilian medical career broadened and matured or perhaps he may desire to continue the new problems he has discovered during his military experience. There are some even who hold that the military medical departments should do no research. This has been said to me by a senior faculty member of a leading medical school. With the Government contributing about 50 million dollars annually to the medical schools for research and also large amounts within the services, there is room in both civil and military careers for the young man interested in research. The opportunities for basic and directed research in the armed services are as dignified and worthwhile as those in civilian fields. I need only remind you of the medical research that has enabled man to keep up with the development of the airplane and the submarine and also to the very fine clinical research by Dr. John Howard and his team in the study of the physiology of the wounded in Korea based upon a similar study in the Mediterranean Theater in World War II. *The Physiological Effects of Wounds*

Frank B. Berry

FRANK B. BERRY, M.D.

Assistant Secretary of Defense
(Health and Medical)

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Foreword

The *United States Army Medical Journal* is the medium of dissemination of information from the medical profession to the medical personnel of the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surge General have each been named as official officers of the *Journal*. The *Journal* is the official publication of the Department of Defense and the Army Medical Department. It is the official publication of the Department of Defense and the Army Medical Department. It is the official publication of the Department of Defense and the Army Medical Department.

FRANK B BERRY M D

Assistant Secretary of Defense (Health and Medical)

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UNITED STATES ARMED FORCES MEDICAL JOURNAL

Volume VI

August 1955

Number 8

MEDICAL RESEARCH IN THE UNITED STATES NAVY

HOWARD T. KARSNER, M.D.

JUSTIFICATION for the program of research in the Medical Department of the Navy may be found in the answers to three interrelated questions: (1) Why do research at all? (2) why do biomedical research? and (3) why do biomedical research in the Armed Forces, specifically the Navy? The answer to the first of these arbitrarily separated questions is evident. In the early history of mankind the advances were based on trial and error, but the human spirit, as it has developed, has learned that progress is essential; progress necessarily dependent on research. This research has been conducted on principles of logical thought and is planned on intelligent hypotheses and ever advancing techniques.

The answer to the second question lies in the manifold programs for the maintenance of physical and mental health. The results are shown in the great prolongation of life in recent years. And, as life has been prolonged, biomedical research is charged with making it happy, healthful, and productive. The answer to the third question is the theme of this article.

The mission of the Armed Forces is simply stated as "combat readiness." Research in weapons systems is readily accepted as essential because end items are tangible and their purpose well defined. However, the use of weapons systems is largely dependent on the men who operate them, and in the man-machine combination the weapon is only effective insofar as the man can do his job. Each must be adapted to the other and the greatest variable in the equation is the man. A broad concept of military biomedical research covers selection, training, adaptation to strange environments, and preservation of health.

Military medicine is more than medical care of military patients. It entails responsibility for discovering new ways and

means of prevention and cure of disease and injury. It differs from civilian medicine in that it is concerned with military personnel in peace and war. It must be mobile and it must be prepared to deal with problems which arise in the field whether they be surgical or medical on land or sea or in the air. Modern history is replete with examples of how doctors and their associates in military situations have faced these problems and have met them successfully. The control of infectious diseases such as malaria, pneumonia and enteric diseases has altered statistics so that those disorders no longer incapacitate the fighting forces. Surgical measures have vastly reduced the incidence of death and subsequent disability following combat trauma.

It is even proposed that military medicine should be recognized as a specialty. At the Fourteenth International Congress of Military Medicine and Pharmacy held in Luxembourg in November 1954 it was agreed that Military Medicine is a specialty in that it encompasses a group of special considerations, aspects or principles peculiar to the needs of the Armed Forces and because it requires of its exponents a unique combination of special knowledge and skills.

There can be no doubt that biomedical research supports the mission of combat readiness and it is a function of the Medical Department to forward this mode of study. It is obvious that war accelerates and augments research. It should be equally obvious that preparation for war is an important objective in peacetime. New situations arise with new types of warfare and research between wars lays the groundwork in two ways. It provides basic and supporting data for studies applied directly to the military needs and requirements. It builds a hard core of investigators with military orientation to be the nucleus of research personnel for expanded programs necessary in time of war.

Lessons learned during war have many applications in civilian practice and conversely, research by civilians has aided the military effort. Thus there are interrelations and correlations both ways. However this does not alter the need for a continuing program of research carried out by medical and ancillary personnel in the Armed Forces.

NAVY INSTALLATIONS

The Bureau of Medicine and Surgery exercises management control and technical control of research laboratories. Management control includes personnel, finances, projects and programs. Technical control covers medical aspects in association with other bureaus and agencies of the Navy. The Bureau has management control of the Naval Medical Research Institute, Bethesda, Md. the Naval Medical Research Laboratory, New

London, Conn , Naval Medical Field Research Laboratory, Camp Lejeune, N C , Naval Medical Research Unit No 1 (NAMRU 1) in Berkeley, Calif NAMRU 3 in Cairo, Egypt NAMRU-4 at Great Lakes, Ill , clinical research in hospitals, and the proposed NAMRU 2 on Formosa In association with other bureaus it has technical control of the research laboratory at the School of Aviation Medicine at Pensacola, Fla the Aviation Medical Acceleration Laboratory at Johnsville, Pa the Aeronautical Medical Equipment Laboratory at Philadelphia, Pa , the biomedical aspects of the Naval Radiological Defense Laboratory at San Francisco, Calif the Naval Biological Laboratory at Oakland, Calif , the Navy Mine Countermeasures Station at Panama City, Fla , and the Experimental Diving Unit in Washington, D C The Dental Division has management control of the Naval Dental School and technical control at Great Lakes, Bainbridge, Md , and San Diego, Calif It is unnecessary to catalog in detail the mission of these various facilities, because this has been done by Shaw,¹ but it can be asserted that the objectives are largely in support of naval operational needs as in submarine and aviation medicine studies of acute respiratory diseases of recruits and defense against atomic and biologic warfare, as well as fundamental studies in physiology biochemistry, pathology, pharmacology biophysics psychology and psychiatry

An example of how operational needs are met is furnished by the program at Pensacola Someone might wonder why the laboratory there conducts studies on such subjects as cosmic rays, molecular structures and lipoproteins These are not shots in the dark but are carefully integrated into the fitness of naval aviators from the time they are cadets until they reach the ages of limited duty and of retirement Studies of psychiatric psychologic and physical factors are essential to forward training and career to select personnel and to evaluate them as they progress Even methods of evaluation and grading require research Cosmic rays may well be significant in high altitude flying Molecular structure is important in the study of explosive decomposition The aging of pilots may be explained at least in part by quantitative determination of special lipoproteins in the blood The causes of attrition are studied with a view to reducing it and its accompanying wastage of time and money

Another example is Operation Hideout at New London Some aspects of this study are still classified but more is now known of the physiology and psychic aspects of prolonged submersion in a submarine than was ever true before Mention need only be made of the *Nautilus* to indicate the operational significance It should be emphasized that studies preliminary to this experiment occupied the attention of the scientific staff at New London for at least three years before it was undertaken At New London

also there have been numerous studies of hearing, of vision, of communications of sonar operations all directly applicable to the needs of the Navy. Color vision has been an important pre-occupation with the aspects of habitability of submarines and lighting of controls but certain other observations are of the utmost significance for air sea rescue. Only by an intimate knowledge of the physiology of the retina could it have been learned that a modification of the color of rafts and clothing will permit recognition of castaways at sea at great distances and high plane altitudes.

DISCIPLINES OF MEDICAL SCIENCE

It is appropriate to indicate how the various disciplines and tools of medical science are used. The use of physiology is widespread. Earlier studies in aviation medicine covered the effects of altitude, hypoxia, orientation, visual perception and communication; these are being given re-examination in relation to high performance aircraft. Other investigations are directed toward effects of acceleration, G stresses and the like are being studied as are pressure suits and protective clothing. The facilities at Pensacola, the Aviation Medical Acceleration Laboratory at Johnsville and the Aeronautical Medical Equipment Laboratory at Philadelphia are devoted to intensive work on these topics and their value for the naval aviator is obvious.

The importance to submarine medicine is emphasized by the studies at New London referred to above. Equally significant are the physiologic studies connected with deep sea diving, the selection of personnel, the gases to be used, the importance of compression and the treatment of casualties. Several installations are concerned including the Experimental Diving Unit and those at New London and Key West. The use of physiology in clinical investigation is mentioned below.

Much of the work in physiology depends on physics and biophysics. Certainly muscular action and fatigue require an understanding of mechanisms of muscular contraction and the energies involved as well as transmission of nerve impulses. This is an important facet of the work at Naval Medical Research Institute. The development of prostheses for amputees, the acrylic eye, the armored vest and the Navy boot represent the fusion of physics and physiology.

Microbiology must be pursued in order to explain outbreaks of disease in the fleet such as dysentery and other microbial diseases both afloat and ashore. The prevention and treatment of these is a part of operational effectiveness. Perhaps as a part of this field is entomology particularly as it applies to vectors of disease. At Bethesda the studies of mosquitoes have

led to methods for the assay of drugs used in suppression and treatment of malaria. Other studies of entomology are applied to transmission of disease and to problems of sanitation.

Pharmacology, in the over all sense of management and treatment of disorders incident to operations in the strange environments to which military personnel are subjected, is evidently important. Witness the efforts to prevent and cure the bodily changes incident to irradiation injury by nuclear weapons. This cannot be elaborated on because of classification. Burns solely thermal or combined with irradiation require rational management. Shock from burns, traumatic injury, and exposure requires treatment by use of fluids, including plasma extenders. The Naval Medical Field Research Laboratory and the Naval Radiological Defense Laboratory have conducted valuable studies on glycerol pectate. Other extenders have been studied in naval laboratories and hospitals. In addition to the physiologic and chemical studies of diseases endemic in the Middle East, progress has been made in treatment by means of correction of the fluid and electrolyte balance, and notably by the use of antibiotics.

Pathology is ubiquitous. In practically all laboratories and hospitals the examination of tissues serves to identify disorders. Furthermore, studies of particular stresses require the background of pathology. This covers many fields, from blast effects as at the Mine Countermeasures Station to experiments on the influence of irradiation on mitotic activity as at Bethesda. It seems apparent that studies of irradiation injury, of airborne agents, of the action of cosmic rays, and like investigations of military significance would be incomplete, and indeed uninformative, without the aid of the pathologist and his techniques.

Psychology, psychiatry, and related fields have their special methods. A few of the unclassified projects will indicate the importance to the military forces. Examples are projects on psychologic studies underlying naval problems, studies on the etiology, prevention, diagnosis, treatment, and rehabilitation of neuropsychiatric casualties, the psychiatric evaluation and assessment of Marine Corps officer candidates, an exploratory study of the implications of psychiatry on certain perceptual phenomena and their apparent explanation, studies for the purpose of screening potentially neurotic inductees and investigation of requisite personality traits through work analysis of key fleet type billets. Some of these studies are inservice and some are on contract. Psychology and to a certain degree, psychiatry are used daily in the selection of personnel for special duties as for example in the submarine service and in aviation.

CLINICAL INVESTIGATION IN NAVAL HOSPITALS

Medical research is not confined to the laboratories nor to specially trained scientists. Support for clinical investigation is now an established policy of the Navy and encouragement in this direction is offered to regular personnel and reserves on temporary active duty including the Medical and Dental Corps and the Allied Sciences Branch of the Medical Service Corps. Clinicians are invited to report interesting well studied cases, assemble data on groups of cases, evaluate methods of treatment and study physiologic, chemical, and metabolic alterations in disease and injury. Research Division stands ready to analyze protocols and experimental designs so that advice is constantly and readily available to the younger investigators. The same sympathetic co-operation is provided by Publications Division, Professional Division and other divisions and personnel of the Bureau.

The Metabolic Research Facility at Oakland Naval Hospital has contributed numerous studies of diseased states and has been active in the use of the artificial kidney. The Prosthetics Laboratory there continues its work on preparation of prostheses and rehabilitation of amputees and plans a research program in these special fields. Certain hospitals have extensive programs of surgical research as for example in Norfolk and St. Albans.

The Bureau now has plans for establishment of Clinical Investigation Centers in the larger naval hospitals. In order that these may be a source of pride to the Navy as well as for certain administrative reasons, a military component is necessary including one or more medical officers assigned full or part time to the center and such other naval personnel as are required. In view of current reductions in force and because special knowledge may be desirable, there will also be a civilian component of scientists, technicians, secretaries, et cetera. This combination will assure the Navy of productive research valuable in discovering the cause, nature, mechanisms and treatment of disease. The Navy will thus take its part in the overall development of modern medicine and surgery.

DENTAL RESEARCH

Dental science and medicine have become more and more closely associated. Dental research is a large segment of the work of the Research Division and the Bio Sciences Division of the Office of Naval Research. It has been built to significant proportions by dedicated dental officers. The studies at the Naval Medical Research Institute and Naval Dental School are correlated with those undertaken in various dental field establishments in the Navy and with contracts negotiated by the Office

of Naval Research The Navy takes justifiable pride in the results of investigations of dental caries, periodontal disease, influence of enzymes, relationship of oral conditions to health and technical advances in treatment and prosthetics

PREVENTIVE MEDICINE

Responsibilities of the Bureau and Medical Department in preventive medicine are far flung and research plays a significant part Knowledge must be increased in relation to insect and rodent control, vectors of disease, etiology of communicable disease, immunization, and treatment These apply to matters in the fleet and ashore In addition, the Navy is one of the largest employers in industry Thus, preventive medicine must investigate and test protection against trauma, visual disorders, toxic materials, et cetera Its program of accident prevention depends in large measure on factors of cause, accident proneness, and other aspects of the problems

BASIC RESEARCH

The discussion above relates to operational projects and programs In science, however there must be a backlog of fundamental research which cannot be allowed to decrease In preparation of an experimental design for operational studies, gaps are sometimes discovered in knowledge of essential parts and of techniques Our investigators are often obliged to fill these gaps by what is called supporting research In order to attract and hold investigators for immediate and future needs of the Service, a certain amount of truly basic research must be encouraged and permitted

As C C Little has said, "All progress against disease and death traces back to basic pioneer research" This is the type of research which has broad theoretical importance It is the seeking of knowledge for its own sake, and many of those who have contributed have not been activated by motives other than increasing knowledge without consideration of its application

Abraham Flexner in his article, "The Usefulness of Useless Knowledge," emphasizes the fact that basic research is pursued without thought as to application Nevertheless, the whole background of our present knowledge of electricity evolved from basic research The discovery of Hertzian waves was without any forethought of the remarkable achievements in radio and radar In my own experience, I have seen the observations of Whipple on regeneration of proteins and blood lead to the control of pernicious anemia and the basic work of Macleod on carbohydrate metabolism lead to the production of insulin The work on fractionation of complement by Hoidelberger by Ecker and others has been applied to the production of highly purified toxoids

and to that remarkable protein named properdin which is instrumental in natural immunity

A few examples from Naval Medical Research Institute are in point. The use of radiogallium in relation to bone tumors was the outgrowth of basic studies on rare metals. The activities of the malarial parasite in mosquitoes were the subject of fundamental studies which in turn have led to a rapid method for assaying antimalarial drugs. The studies on crystal formation in freezing tissues have led to a new concept of the damage in frostbite and give a clue to improved methods of preserving blood for transfusion. Promise of treatment of nerve gas poisoning and of radiation injury has resulted from basic studies on acetylcholine and its esterase and on sulfhydryl groups. The development of the treponemal immobilization test rested on attempts to cultivate this organism. Examples could be multiplied.

OFFICE OF NAVAL RESEARCH

Without this unique organization medical research in the Navy would suffer serious handicaps. A most important function is the support of basic research in universities, research institutions, and other nonprofit agencies. The Office covers the large field of naval research in its various divisions, but especially important to the Bureau of Medicine and Surgery is the Bio Sciences Division, with which the inservice research is closely allied. Through its many contacts information can often be provided to fill some of the gaps important to the solution of operational problems. It serves the Bureau in making contracts with extramural agencies for these purposes and for studies to be correlated with those in the Service Research which it supports directly. helps build up that backlog of basic knowledge essential to the program of biomedical research.

COORDINATION

Various mechanisms are established for coordination, liaison and advice. The offices of the Assistant Secretaries of Defense for Research and Development and for Health and Medical Affairs have contributed significantly. The Military Coordinating Committee of the Assistant Secretary for Research and Development meets regularly to coordinate the work of the three Services and to avoid needless duplication. The National Research Council is always available for advice through its committees and subcommittees. Of special importance in evaluation and guidance is the Committee on Naval Medical Research of the National Research Council. All members are Navy orientated and some have performed extensive duty in the Navy. Rear Admiral Richard A. Kern (MC) USNR is the Chairman. Rear Admiral Winchell McK. Craig (MC) USNR is a member, as are also Doctors Eugene F.

DuBois, Lee E Farr, Maurice J Hickey, Lawrence C Kolb, Christian J Lambertson, Joseph L Lillienthal, Jr, Harry Most, Carl Pfaffmann, and Richard E Shope In addition, there are the Honorary Consultants to NAMRU 3 in Cairo, the American members being Doctors Lowell T Coggeshall, Wallace Fenn, and Paul B Beeson The Armed Forces Epidemiological Board is constantly available for information, guidance, and aid Coordination is aided by the Bio Sciences Information Exchange and Armed Services Technical Information Agency Authorities in the Army Medical Service Graduate School and the National Institutes of Health, as well as in the numerous scientific activities in the Washington area are generous in their aid The London branch of the Office of Naval Research keeps us aware of research in Britain and Europe Liaison officers in the British and Canadian Joint Services give us valuable aid

PERSONNEL

Those who conduct research are in two main categories Numerous clinicians conduct research in addition to care of patients, teaching and administration The second category includes those who devote much or all of their time and energy to investigation With the first group it is in a sense an avocation with the second it is a vocation, "a major social force" This latter group comprises those who recognize research as a way of life and have dedicated themselves to it The number of clinicians is determined in large part by their own desires and time The number in the second group is determined by assignment, which in its turn depends on the number of medical officers and others allocated by instructions from the Department of Defense At this writing there are 67 medical officers a reduction in the past 18 months of about 40 percent In dental research there are 11 officers on full time Seventy one allied science Medical Service Corps officers give their whole time to research

The esprit de corps of the Navy depends in considerable measure on having a firm corps of medical and dental personnel made up of those who, by training, experience, and motive, are dedicated to research This corps of uniformed personnel can be augmented but not substituted by civilian scientists However, the research potential of the Navy is increased by civilian scientists and there is no reason why this should be changed The ratio of uniformed and civilian scientists hinges on the number of the former allocated and the number of the latter allowed by civilian ceilings It varies naturally with the kind of laboratory or other activity

Medical research in the Navy is still in its youth, it was begun in a major way in 1942 and has grown steadily since that time The man who initiated a broad interest in research was Rear

Admiral Harold Wellington Smith (MC) USN and his devotion to it was manifest long after his retirement. In an address before the Surgeon General's Conference 16 April 1945 he said: "Research is the child in whose hands the future lies. The fruit of his vision is seen in the research activities of the Medical Department in spite of limitation of personnel and funds. The number of research reports is hardly an indication of the quality of the work but we can be proud of the fact that in 1954 349 reports were received in the Bureau some classified and some reproduced for publication in scientific literature."

SUMMARY

Medical research in the Navy is essential to the combat readiness of the service. It is pursued in various research laboratories under either management or technical control of the Bureau of Medicine and Surgery situated in the United States and overseas and in naval hospitals. It applies to our personnel afloat and ashore. The disciplines of biology are used as tools in the solution of problems undertaken in research laboratories or naval hospitals. Engaged are uniformed and civilian personnel at different levels of rank including regulars and those on temporary active duty. The studies may be operational, supporting, or basic as guided by the needs of the Service. In addition contributions are made in dental science and preventive medicine. Coordination is assured by bodies in the Department of Defense notably the Office of Naval Research and by quasi governmental and civilian agencies. With full recognition of the significant contributions of civilian scientists the maintenance of a strong corps of investigators in uniform is of the utmost importance to the overall esprit de corps and morale of the Naval Medical Department.

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2. Fletcher A. U. *Science* 100 544 552 O 1939

BEN FRANKLIN ON FREEDOM OF THE PRESS

It is likewise as unreasonable what some assert: *That Printers ought not to print any Thing but what they approve* since if all of that Business should make such a Resolution and abide by it an End would thereby be put to Free Writing and the World would afterwards have nothing to read but what happened to be the Opinion of Printers.

—BENJAMIN FRANKLIN

EXPERIENCES IN CARDIOVASCULAR SURGERY

1 Patent Ductus Arteriosus Coarctation of Aorta

WELDON J WALKER *Lieutenant Colonel MC USA*

WARNER F BOWERS *Colonel MC USA*

HENRY C HARRELL *Colonel MC USA*

CLESTON W GILPATRICK, *Major MC USA*

JOHN E COLES *Captain USAF (MC)*

RICHARD F BARQUIST *Captain MC USA*

GARTH B DETTINGER *Captain, USAF (MC)*

DONALD FAHY *Major MC USA*

THEODORE H NICHOLAS *Major MC USA*

RALPH H FORRESTER *Major MC USA*

SOME OF THE most outstanding advances in cardiac surgery, made during the past several decades, are still new in the memories of most of us. Listed in the historic order in which they became amenable to surgical correction are four conditions—patent ductus arteriosus, coarctation of the aorta, mitral stenosis, and atrial septal defect. In addition, effective therapy for the most dreaded complication of these conditions, subacute bacterial endocarditis, is a relatively recent development. These innovations have made the care and management of patients with heart disease a more rewarding experience. A continuing challenge remains, however, in the realization that patent ductus, coarctation, mitral stenosis, and atrial septal defect cause only about four percent of the deaths from heart disease in the United States. The ability of Lillehei¹ et al at the University of Minnesota to unhurriedly close ventricular septal defects under direct vision is an exciting development indicating new horizons ahead.

Our experience in the surgical correction of these conditions is discussed herein in detail. Experiences with other operable cardiac lesions are summarized. The diagnosis and management of these patients at this hospital have been accomplished through the co-operative endeavor, not only of the medical, surgical, and radiologic services, but of such other hospital services as anesthesiology, pediatrics, and nursing as well.

A PATENT DUCTUS ARTERIOSUS

Patent ductus arteriosus is the third most common form of congenital heart disease, exceeded in frequency only by atrial

From Book Army Hospital Fort Sam Houston, Texas. Presented at symposium on the monthly meeting on 9 November 1954.

and ventricular septal defects. It is twice as common in females as in males. When the ductus fails to close at birth a shunt of blood from the high pressure systemic circulation to the lower pressure pulmonary circulation usually results. This shunt may reach huge proportions so that as much as 75 percent of the left ventricular output is forced back into the pulmonary circulation. Cyanosis is not present except when pulmonary hypertension develops with reversal of blood flow through the shunt and is then often confined to the lower half of the body. Characteristic features are the continuous machinerylike murmur with a thrill in the left infraclavicular area, increased pulse pressure with a collapsing pulse, enlarged heart, and increased pulmonary vascularity. Ninety five percent of patients have the continuous murmur but in the presence of pulmonary hypertension only a systolic murmur may be heard and the diagnosis must be established by cardiac catheterization or other diagnostic means.

This lesion is a definite threat to life. The average life expectancy without surgical intervention is between 25 and 35 years. The usual cause of death is subacute bacterial endocarditis or congestive heart failure. Because of the hazard to life from a patent ductus and the low operative mortality, surgical closure is recommended for all patients with uncomplicated lesions. Operation is usually deferred, however, if a child's circulation is not seriously embarrassed until he is about four years of age because of the increased incidence of pulmonary complications due to thoracic operation in infancy.

ROENTGENOGRAPHIC FINDINGS

In this condition the most prominent roentgenographic feature is enlargement of the pulmonary artery and left ventricle (fig 1). The enlargement of the pulmonary artery is seen not only proximal to its bifurcation but also in the main branches and out into the lung periphery. This dilatation is caused by the increased blood flow and by hypertension of the lesser circulation. The latter may eventually result in hypertrophy and enlargement of the right ventricle with resulting rotation of the heart and elevation of the apex (fig 2).

The arch of the aorta tends to be normal to large in size and shows vigorous expansile pulsation on fluoroscopic examination.

Margulis and others pointed out that calcification at the aortic end of the ductus is rarely seen but when demonstrated is diagnostic of the condition. This calcification is ringlike and is in the wall of the aorta.

Goetz was the first to point out that a defect in the pulmonary artery filled with opaque material could be caused by regurgitation of anopaque blood through the patent ductus. This is

referred to as the "jet sign" and is a highly reliable diagnostic sign when found. It cannot be demonstrated without fairly high speed angio-cardiographic technic. This may be reversed by forceful injection of opaque media into the pulmonary artery, causing elevation of the pressure to the extent that the dye will enter the aorta. We have yet to demonstrate successfully either of these highly diagnostic roentgen signs.



Figure 1 Roentgenogram of a patient with patent ductus arteriosus showing enlargement of the left ventricle and pulmonary artery. In addition, there is prominence of the aorta and pulmonary vasculature.

SURGICAL CONSIDERATIONS

Matters of surgical technique usually are sufficiently elementary so that little discussion of them is needed, but in a relatively new field procedure is more important. For operations on the patent ductus, we place the patient either in the lateral or anterolateral position with left side up. Either position is suitable but many prefer the lateral position for adults and the anterolateral approach for children. Whether the chest is entered through the bed of a resected rib or through an intercostal space is strictly

a matter of individual choice, each having its proponents who use either method. Exposure of the ductus including its posterior aspect is entirely by sharp dissection under direct vision.

The question of whether to ligate or divide the ductus has been a matter of some controversy. Obviously, it is simpler and quicker to ligate but the decision must be based on end results

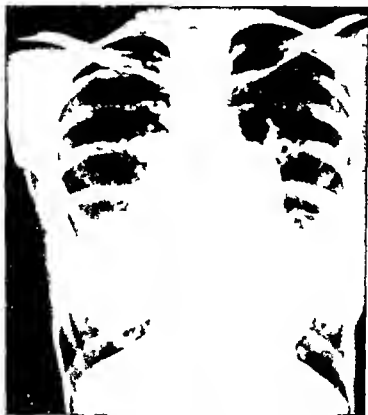


Fig. 2. Right thoracic view of patient with patent ductus arteriosus. The marked pulmonary hypertension. Cardiac to the right of the vertebral column. The abdominal aorta is ligated distally from the episternal

rather than on expediency. If ligation is done, a ligature at each end of the ductus should include the adventitia of the aorta and pulmonary artery to prevent the force of blood from pushing the ligatures toward the center of the ductus, leaving a nipple of lumen on each end. This causes return of the murmur even if the shunt is not reestablished and probably favors development of vegetations, which the operation was to obviate. If ligation is used, a third central transfixing tie should be used to still further hinder recanalization.

Complete division of the ductus seems more definitive and is recommended. The Pott's ductus clamps with angled handle are used and we have not found it necessary to use more than one clamp on each end. We obtain length of ductus by pushing the clamps well into the wall of the aorta and pulmonary arteries. In case a very large short ductus is found and sufficient length cannot be attained, dissection around the aorta will allow placement of one of several types of clamps which include part of the aortic wall without shutting off the lumen. The ductus then can be divided while a simple clamp is on the pulmonary artery end. The ductus is divided with a long knife, leaving more cuff on the aortic side. Closure by No. 00000 silk sutures may be by simple over and over stitch in one layer, by over and over stitch in two layers, the second layer being reversed so that the stitches cross, or by a double layer, the deep one as a continuous mattress and the superficial one over and over. The side to be closed first is a matter of individual choice. Because of lower pressure, the pulmonary side rarely gives trouble and it is well to get this clamp out of the way first.

When closure is completed and the clamps are removed, a small gauze square is packed over the suture lines, oozing blood is ignored, and the lung is re-expanded. It requires about five minutes for the sutures to reseat themselves in adjustment to arterial pressure, at which time the suture lines are inspected. Oozing of blood usually will have stopped. Only a spurting area indicates need for an additional suture and, even here, time may cause hemostasis to become complete. Several types of accidents may eventuate. The least alarming is damage to the recurrent laryngeal nerve. This complication can be avoided by care, by sharp dissection, and by maintaining a dry field. Sometimes the pulmonary end of the ductus will slip back into the pericardium. Rapid opening of the pericardium, pressure control of bleeding, and application of a clamp constitute the preferred method of procedure. This seemingly simple procedure may require several hours of operating time. Tearing of the ductus or excessive leakage at the aortic end is more serious because of the greater pressure and more rapid bleeding. Cross clamping of the aorta long enough to reapply a clamp to the ductus or stump is an acceptable procedure. Some operators place an umbilical tape around the aorta primarily so this can be used in an emergency to control the aorta. In general, division and suture of the patent ductus is not a difficult procedure, provided the operator is technically competent and performs each successive step correctly and well.

RESULTS

Since 1950, 31 patients have been operated on for a patent ductus at this hospital. Three were operated on in 1950, five in

1951 six in 1952 seven in 1953 and 12 in 1954. The average age of the patients operated on was 15.5 years, the youngest being three years of age and the oldest 35. The operative procedure consisted of ligation or division of the ductus. 17 were ligated and 14 were divided. In 1954 all were divided.

Of the immediate complications one was intrapleural bleeding which necessitated re-exploration of the chest. This bleeding was found to be from a small apical adhesion and not related to the division of the ductus. One patient in whom ligation of the ductus was performed had a recurrence of her murmur about one week following the operative procedure but she was symptomatically improved. One patient following ligation of the ductus, was found to have a paralysis of the left diaphragm and another in whom the ductus had been divided had paralysis of the left vocal cord which persisted for two months.

Coexisting anomalies which we have found at the time of exploration for patent ductus are: An aortic pulmonic window and a patent ductus, a pulmonary stenosis and a patent ductus and an aneurysm of the left circumflex coronary artery with a patent ductus. The patients with the first two mentioned conditions died the first within 24 hours from cardiac failure and the second three months after operation. Those two patients were not included in the previous series because patent ductus was not their primary disease although they were included in our total mortality figures. The third patient had no treatment for the aneurysm of the coronary artery and is doing well.

The one late complication was a recurrent murmur. At re-exploration five months after the initial operation, the ductus was divided but no definite lumen was identified. There was no mention in the postoperative follow up as to whether the murmur had disappeared.

The mortality rate from either ligation or division of the patent ductus has been zero in this series of 31 patients.

T WAVE CHANGES IN PATENT DUCTUS ARTERIOSUS

Investigators at the Institute of Cardiology in Mexico City⁴ and elsewhere have written of the electrocardiographic changes in patients with patent ductus arteriosus. The characteristic changes described consist of high symmetrically peaked T waves. This is thought to result from diastolic overloading of the left ventricle and occurs in other conditions associated with diastolic overloading of this ventricle. The electrocardiogram in patients with patent ductus is usually read as normal or left ventricular hypertrophy. The high peaked T waves do not constitute an abnormality in the usual reading of electrocardiograms.

The electrocardiograms of patients with proved cases of patent ductus arteriosus at this hospital have been reviewed. Both preoperative and postoperative electrocardiograms are available for study from 23 of the 31 patients. Of these 23, electrocardiograms of 18 were read as "normal" and of five as "abnormal." Of the five abnormal readings four were "left ventricular hypertrophy" and one was "combined ventricular hypertrophy." The characteristic T wave changes were noticeable in the electrocardiograms of 19 patients, or 82 percent of those considered. This peaking and increased amplitude of the T waves were not uniform in all electrocardiograms because they varied in degree from patient to

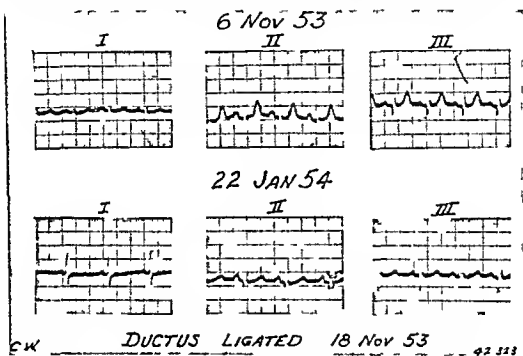


Figure 3 Pre and post-operative electrocardiograms of patient with patent ductus arteriosus. The high peaked T waves in leads II and III are decreased in amplitude following ligation of the ductus.

patient. These findings were seen best in different leads in the electrocardiograms of different patients, and there was no apparent uniformity as to which lead of the electrocardiogram might demonstrate them best. Four patients, or 17 percent, did not have the characteristic T wave findings. Those four were women in their early twenties; all had normal electrocardiograms and few or no symptoms preoperatively.

When the postoperative electrocardiograms were compared with the preoperative tracings the following were noted: (1) The peaking and increased amplitude of the T waves reverted toward normal in all cases, (2) left ventricular hypertrophy reverted toward normal in all cases, and (3) the electrocardiogram of the one

patient with combined ventricular hypertrophy reverted toward normal following obliteration of the ductus

If looked for the characteristic T wave changes of diastolic overloading of the left ventricle may be seen in a large percentage of patients with patent ductus arteriosus. These T wave changes revert toward normal following obliteration of the ductus (fig 3)

POSTOPERATIVE CARDIAC CATHETERIZATION

In 1929 Forssmann performed on himself the first human cardiac catheterization using a ureteral catheter passed through an arm vein exposed by a surgeon. Since that time the procedure has become standardized and with the development of improved methods for pressure recording and gas analysis increasingly useful. At this hospital the technique has been to expose a suitable arm or leg vein under local anesthesia in adults or under rectal pentothal (brand of thiopental sodium) analgesia combined with local infiltration in children. The usual vein has been the median basilic in the left antecubital space, the greater saphenous vein has proved particularly useful in small children. A special ureteral type catheter is introduced and advanced through the peripheral veins into the vena cava, the right atrium, the right ventricle and into the pulmonary artery and distal divisions of the pulmonary arteries. Occasionally it is possible to pass the tip of the catheter through a septal defect or into an anomalous pulmonary vein. Continuous electrocardiographic monitoring is used and the catheter is advanced under fluoroscopic observation. Recording facilities allow pressure recordings and oximeter analysis of oxygen saturation when desired. The oximeter determinations are checked by gas analysis. The safety and morbidity of the procedure seem comparable to endoscopy and other well-established diagnostic instrumentations.

Cardiac catheterization is a procedure requiring the co-operative efforts of members of the departments of anesthesiology, radiology, surgery, medicine and the laboratory.

Preoperative cardiac catheterization is used in the study of cardiac problems when it is thought probable that useful diagnostic information will be obtained. The benefits to the patient when a surgically correctable lesion is proved are obvious. Catheterization following cardiac operations is less often of immediate benefit to the individual patient. It is usually done to obtain information which will advance medical knowledge and in the evaluation of surgical techniques or elucidate the physiology of the operated lesion or to determine the reversibility of pathologic changes. Because of these considerations and because many of our operative cardiac patients do not reside permanently in this area the number of patients we have studied following operation is small.

To date we have had occasion to study only one patient following a corrective operation for patent ductus arteriosus. The pertinent catheterization findings are summarized in table 1. These findings demonstrate reduction of pulmonary hypertension following closure of an unusually large patent ductus.

TABLE 1 *Pre and post operative cardiac catheterization findings in patient with patent ductus arteriosus*

Findings	Preoperative	Four months postoperative
Right ventricular pressure	100/7 mm Hg	48/2 mm Hg
Pulmonary arterial pressure	90/54 mm Hg	48/15 mm. Hg
Shunt	8 L/min	none
O ₂ Pulmonary artery	87 percent saturation	66 percent saturation
O ₂ vena cava	68 percent saturation	67 percent saturation

B COARCTATION OF THE AORTA

Coarctation of the aorta is from three to four times more common in men than in women. It is thought to develop in utero. The usual point of constriction of the aorta is just distal to the insertion of the ductus arteriosus. As a result of this constriction there is a stimulus to collateral circulation in utero. If the fetus survives there is little additional circulatory burden at birth and most do well for some time thereafter. If on the other hand the constriction of the aorta is proximal to the insertion of the ductus arteriosus, there is no stimulus to the development of collateral circulation during intra uterine life because at that time the lower part of the body gets its blood supply largely from the pulmonary artery through the ductus. Under such circumstances, if the ductus closes at birth, an overwhelming load is suddenly thrown on the circulation and death often ensues from congestive heart failure before collateral circulation can develop.

Coarctation definitely shortens life, the average life span is about 30 years and only one in 10 survives beyond 50 years. As a result of impediment of blood flow there is usually hypertension in the upper part of the body that is more marked following exercise; hence, the resting blood pressures may give a false sense of security. The usual causes of death in patients with coarctation are rupture of the aorta in 25 percent, subacute bacterial endocarditis, often on an associated bicuspid aortic valve, in 20 percent, congestive failure in 20 percent and rupture of berry aneurysms of the circle of Willis in 10 percent. Coarctation should be ruled out as a contributing cause of spontaneous subarachnoid hemorrhage in a young person.

The diagnosis of coarctation is aided by carefully palpating the femoral arteries as a part of every physical examination and by comparing the blood pressure in the arms and legs if there is a suspicion that the femoral pulses are diminished. The ideal time to operate on these patients is between the ages of eight and 18 years so that they will not be needlessly exposed too long to the many potentially fatal complications.

The responsibility for the timely diagnosis of coarctation, hence rests heavily on the pediatrician. Statistically one in every 2 000 to 3 000 children have coarctation.

ROENTGENOGRAPHIC FINDINGS

The roentgenogram aids in determining the diagnosis and demonstrating the site and extent of the lesion. Frequently coarctation is suspected from the study of routine roentgenograms of the chest.

Rib notching was the first recognized roentgenologic sign of this lesion and remains the most important one. Other causes for rib defects have been cited but are extremely rare and are of little clinical significance. Reliable indications of diagnostic rib changes are observed in about 70 percent of patients with proved lesions. The fourth to the eighth ribs are commonly involved. Less frequently changes may be seen above and below this level. Notching becomes more prominent as the patient grows older. This phenomenon is rarely seen below the age of 10 but has been reported at a much younger age. Unilateral changes may be seen when the left subclavian artery is in the site of the coarctation. Figley recently called attention to changes in the contour of the barium filled esophagus associated with coarctation particularly the displacement caused by the poststenotic dilated segment. Poststenotic changes may be demonstrated in a high percentage of patients by introducing barium into the esophagus and making roentgenograms in the oblique and lateral positions.

The "figure 3" sign is helpful when present particularly if rib notching is not prominent. The upper arc of the 3 is due to prominence of the left subclavian while the actual site of the coarctation is represented by the center portion of the 3. The lower arc which is usually not as acute as the upper one represents the poststenotic part of the descending aorta (fig 4).

Absence of the aortic knob is the least reliable sign of this lesion. About 50 percent of the patients will have an aortic shadow that cannot be differentiated from the normal. The site and extent of the lesion is best demonstrated by angiocardiology (fig 5) or aortography.

SURGICAL CONSIDERATIONS

In the surgical correction of coarctation of the aorta, a lateral position with wide exposure is desirable, sharp dissection is advisable, and a dry field is a necessity. As the coarcted area is freed of overlying pleura, the ductus area is exposed and the ductus or ligamentum is ligated and divided. This should

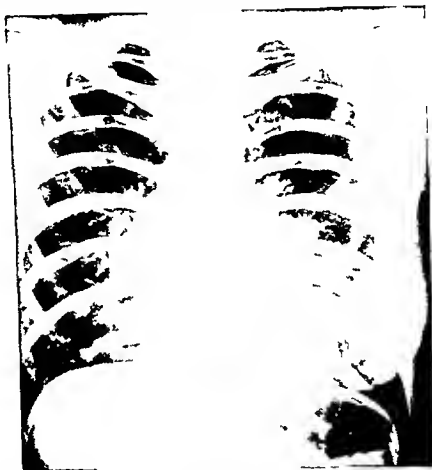


Figure 4 Roentgenogram demonstrating rib notching and the figure 3 sign in patient with a proved coarctation of the aorta

be done carefully because often there is a residual lumen. As dissection progresses, one must manage the dilated intercostal vessels. Only those that interfere with the anastomosis should be divided. Others should be temporarily clamped if the cross clamps on the aorta are unlikely to control them. Usually, by angiography preoperatively, it will be known whether or not there is a long defect which will require a graft. Some operators have turned down the subclavian artery to anastomose it with the distal segment. This is satisfactory if linking is prevented. A better procedure is end-to-end anastomosis of the aorta after excision of the coarcted segment. Here again, suture technic is largely

a matter of individual preference. In our patients an over and over stitch or a continuous mattress suture has been used. Experimental work has shown the end results to be identical. For cross clamping simple coarctation clamps are used. In most of our patients the lumen was tiny so that cross clamping was not dangerous, and we have had no complications. In the absence of good collateral circulation however speed is essential and



Fig. 5. Angiogram demonstrating the iliac and femoral arteries and the extent of the aortic coarctation.

refrigeration should be employed or some by pass procedure used. In case a graft is needed it should not be too long for the defect because the force of the blood flow will tend to buckle and obstruct the graft. The graft should be placed with its ligated intercostals uppermost so that if bleeding from them occurs they will be accessible. We have not used nylon cloth grafts in patients but have done a successful series in animals. We have used lyophilized and fresh preserved vessels with equal success.

RESULTS

Since June 1953 11 patients with coarctation of the aorta have been operated on at this hospital all are living. Ten patients had

their coarctation resected. In one patient who lacked significant collateral circulation, operative removal of the constricted area was considered a greater risk than his disease and resection was not done.

Seven patients were males, four females. They ranged from a boy of eight years to a woman of 45 years who had been told six years previously that she was too old to risk surgical intervention.

Of the 10 patients who had surgical correction, three required grafts which were homologous aortic grafts. In the seven patients having primary anastomosis, defects up to 2.5 cm. in length were overcome successfully.

The lumina of coarctations varied from complete obliteration to 5 mm. in diameter. Angiocardiography in the one patient with minimal disease showed little collateral circulation, and we must assume that minimal constriction existed. Another patient by angiocardiography showed little collateral circulation. This patient was refrigerated in an ice bath and the rectal temperature lowered to 82.4° F. With lowered metabolism, the spinal cord was able to withstand the oxygen deprivation during the period of circulatory occlusion while a graft was inserted, and the patient made a complete recovery.

Complications have been few. One patient bled from an intercostal artery while still on the operating table. Thoracotomy and ligation of the vessel was done with dispatch and success. The second complication was in a 39 year old woman who on the twelfth postoperative day suddenly developed shock. On conservative therapy she made an uneventful recovery. Bleeding, either from an intercostal artery or from the anastomosis itself, apparently had occurred.

Our follow up period is short. All patients in the immediate postoperative period showed improved pulses and elevation of blood pressure in the lower extremities with a decrease in blood pressure of the upper extremities. All patients became normotensive except one whose blood pressure was reduced to some extent. One patient continued to have an aortic diastolic murmur presumably due to a bicuspid aortic valve.

The outlook in all fairness is not completely optimistic. One wonders if cerebral aneurysms are the result of hypertension or are associated congenital anomalies. Valvular abnormalities, especially the bicuspid aortic valves present in a large number of patients with coarctation of the aorta, predispose to subacute bacterial endocarditis and are not correctable by operative means. Nevertheless, surgical intervention is the only form of definitive therapy available and is proving successful.

the discharge of his responsibilities much easier. The following "rules" are most suitable if applied during the 1st hours immediately following the atomic explosion.

The concept of thumb rules for evaluating radiation hazards is not original. A splendid manual has already introduced such rules. The rules presented in this article however are modifications of the earlier rules and more closely approximate the true estimate they incorporate into the system two new practical rules and state these principles in a form which may permit easier retention.

THE 2-4-6 RULE

When readings are announced by a monitor it is obvious that their significance must be understood in terms of probable sickness and/or death. It is admitted that susceptibility to radiation varies among individuals. Statistical data which express the probability of sickness and/or death from radiation are available. The data on which probabilities are based are accepted as valid even as much as actuary statistics: i. e. the laws of probability and chance.

The most important nuclear radiation hazard to personnel from an atomic detonation is gamma radiation. By definition, an *acute* dosage of gamma radiation is that amount of gamma received by a person over the entire body within a 24 hour period.

Table 1 lists the probable effects on personnel of varying amounts of acute gamma dosage. Nausea and vomiting developing within 24 hours after radiation exposure are among the earlier indications that a person has received a significant amount of gamma radiation. However it must be kept in mind that under conditions of stress nausea and vomiting might be of psychogenic origin.

In personnel who have received 600 r or more gamma radiation vomiting will probably develop within the first four hours after exposure.

Table 1 deals with dosage and not dose rate. Dosage refers to the amount of roentgen whereas dose rate refers to rate of roentgen. This distinction is akin to that between the mileage indicator of an automobile (revealing the number of miles traveled: i. e. dosage) and the speedometer (indicating miles per hour: i. e. dose rate).

The "2-4-6" rule merely reminds one that an acute dosage of

200 r	ul s	50 pe	t f pe	ml	k w th	d h	
400 r	lt	100 pe	e f pe	on l	k w h	50 pe	t d ths
600 r	lt	100 pe	e t f pe	on l	k w th	100 pe	t d th
B l p		w d ur f w urv					

TABLE 1 *Probable effects of varying amounts of acute gamma dosage on personnel*

Acute dosage (r units)	Effect on exposed personnel		Comment
	Sick (percent)	D ₁ (percent)	
50	0	0	No sign of sickness. No decrease in combat effectiveness.
100	2	0	Nausea and vomiting in two percent for about one day. All able to perform duty.
150	25	0	Nausea and vomiting in 25 percent for about one day. No need for personnel evacuation expected.
200	50	0	One half are sick. Nausea and vomiting in 50 percent for about one day. All evacuated as soon as possible. No deaths expected.
300	100	25	Nausea and vomiting in all on first day. All evacuated as soon as possible. Survivors ineffective for full military duty for about three months.
400	100	50	All sick, one half die. Nausea and vomiting in all on first day. Survivors ineffective for full military duty for about six months.
650	100	100	All sick, all die. Nausea and vomiting in all within four hours. Survivors ineffective for full military duty for over six months.

Data taken with modification from table 7-40 p. 104 of reference 2.
 Bolger states willens as follows:

TWICE THE TIME IS ONE HALF THE DOSE RATE WHICH IS 10 PERCENT TOO HIGH

Radiologic defense bills provide for monitors who after an atomic explosion survey areas to find existing dose rates. Because the number of monitors and radiac instruments are few, because the entire territory requiring monitoring is extensive, and because there are always unforeseen circumstances incident to combat conditions which delay the frequency of monitoring these areas, it is highly probable that within eight hours or so after an atomic detonation many essential compartments will have been monitored only once. Furthermore, it is likely that the first eight hours or so after an atomic burst will be the period during which officers-in-charge will be required to make their most critical decisions. Hence any means by which dose rates for various

after detonation can be computed is highly desirable and able

H A B

H is the moment of burst

A is a specified time after H

B is a specified time after A

Time period HA equals time period AB

The rule of "twice the time is one half the dose rate which is 10 percent too high" states that when time period HA equals AB the estimated dose rate at moment B is one half the dose rate taken at moment A but this estimated dose rate for moment B is in error by 10 percent i.e. 10 percent too high

Example At one hour after atomic burst the dose rate is 1000 r/hr

1 What is the estimated dose rate at two hours after burst?

2 What is the dose rate at four hours after burst?

Solution Twice the time is one half the dose rate which is 10 percent too high is the rule

1 At two hours after detonation the dose rate is one half of 1000 or 500 r/hr but this is 10 percent too high Correcting 500 by 10 percent gives 450 r/hr as the estimated dose rate at two hours after burst

If the dose rate is 450 r/hr two hours after burst at four hours after burst the dose rate will be one half of 450 or 225 r/hr but this is in error at +10 percent Therefore the dose rate at the end of four hours will be about 200 r/hr

TWICE THE TIME WHICH IS 10 PERCENT TOO HIGH IS ONE HALF THE DOSE RATE

The half life of a radioactive material is defined as the period of time in which its dose rate decreases to one half its original value This definition is found in numerous texts and is well known to students of chemistry and physics

Burst	1 000 r/hr	500 r/hr	250 r/hr	125 r/hr
	A	B	C	D
	1 hr			
		1 1/2 hr		
			3 1/2 hr	
				5 1/4 hr

A is the instant one hour after atomic burst the dose rate being 1000 r/hr

B is a specified time after A when the dose rate is 500 r/hr

C is a specified time after B when the dose rate is 250 r/hr

D is a specified time after C when the dose rate is 125 r/hr

Thus, the period of time represented by AB is a half life, t_e , the period of time in which the dose rate dropped from 1,000 r/hr to 500 r/hr. The period of time BC is another half life, t_e , the time in which the dose rate dropped from 500 r/hr to 250 r/hr. Similarly, still another half life is represented by the time interval CD, t_e , the time in which the dose rate dropped from 250 r/hr to 125 r/hr. Hence, the entire period of time from A to D is three "half lives."

An interesting and useful relationship exists between the time periods BC and AB as well as between CD and BC. This relationship is a ratio in which time period BC is about four fifths of time period AB, and CD is four fifths of BC. This means time periods can be related to moments when the dose rate decreases by one half, a useful bit of information.

This relationship is also expressed in the so called four fifths rule which states that the half life of gamma radiation from an atomic bomb fission product is equal to four fifths of the elapsed time since detonation.

Using a factor of four fifths in mental computation might easily lead to error whereas making mental corrections of 10 percent is relatively easier. The rule "twice the time which is 10 percent too high is the time when the dose rate will have dropped by one half" is another form of expressing the "four fifths rule." "twice the time which is 10 percent too high" always representing the moment when a half life period is completed.

Example At one hour after atomic burst the dose rate is 1,000 r/hr

1. What time after explosion will the dose rate be 500 r/hr?
2. What time after explosion will the dose rate be 250 r/hr?

Solution Twice the time which is 10 percent too high is one half the dose rate. This is the rule.

1. At one hour after explosion the dose rate is 1,000 r/hr. therefore at twice that time t_e two hours after explosion the dose rate is 500 r/hr but two hours is 10 percent too high. Hence correcting two hours by 10 percent gives 1.8 hours after explosion as the time when the dose rate will be 500 r/hr. In other words 1.8 hours represent the completion of the half life.

2. At 1.8 hours after explosion the dose rate is 500 r/hr. Hence t_e times 2 (twice the time) which is 3.6 but 10 percent too high means that at 3.24 hours after detonation the dose rate will be 250 r/hr.

In the answer (3.24 hours), it is only necessary to carry over the result to one decimal place for all practical purposes because 0.04 of an hour is only 2.4 minutes. Eliminating the second decimal place makes

for ease in mental computations without significantly altering the results for practical purposes

THE DOSE RATE IS THE DOSAGE FOR THE FOLLOWING HOUR

The rule states that the dose rate at a given amount represents the total dose of radiation (i.e. dosage that will be received) in the hour following that given moment.

The rule is only an approximation since it neglects the decay of radioactive material during the one hour period. A more exact method would allow for decay which calls for decay curves or tables of computed data. Although the values obtained by this rule are slightly high this is a desirable feature because it includes a safety factor in the estimate.

It must be cautioned however that this rule can be used at any time *after* one half hour following the burst. During the first half hour immediately following the burst, calculations by the use of this rule or any other method are of questionable accuracy due to the changing conditions in the deposit of contamination. It is in this first half hour following atomic detonation that full reliance must be placed on dosimeters and radiac instruments.

Example The Command states that no man should receive radiation in excess of 50 roentgens. An emergency task which will take one hour must be performed. The dose rate in the area is 40 r/hr. May the men enter the area and work there one hour without exceeding the Command's 50 r maximum exposure limit?

Solution The dose rate is the dosage for the following hour is the rule.

If the dose rate at the beginning of the hour is 40 r/hr and if the personnel entered at that moment and stayed for an hour they would receive a total dose of no more than 40 roentgens. Hence the answer is Yes.

"FIT FOREVER" RULE

The rule states that the maximum radiation dose that can be received from a given moment to infinity is 5 IT.

F represents the factor 5 of the formula

I is the dose rate in roentgens per hour at a time (T) after the explosion

T is the total time since the explosion

Example The dose rate for an area is recorded as 10 r/hr at a moment six hours after atomic detonation. What is the total dose in roentgens that can be received if men enter that area at the moment of recording stay there until infinity?

Solution FIT forever is the rule

F is 5 I is 10 r/hr and T is six hours. Hence 5 times 10 times 6 equals 300 roentgens the total dose that these men would receive if they stayed in the area forever

"FIT FOR HALF LIFE" RULE

This rule states that. "The total dose in roentgens received during one, two three, four or five half life periods equals 1/10 2/10 3/10 4/10, or 5/10 of 5 IT (i.e., "FIT forever" rule)

Example The dose rate in an area two hours after atomic burst is found to be 20 r/hr What dose in roentgens will men receive if they enter that area at the time of reading and stay 16 hours?

Solution The half life of a radioactive substance as previously stated is the period of time in which its dose rate decreases to one half its value Because the dose rate at 2 hours after burst was 20 r/hr the moment when the dose rate decreased to one half of this value end of half life (as found by the twice the time which is 10 percent too high rule) is 2 times 2 hours or 4 hours after burst but this is 10 percent too high therefore the moment 3.6 hours after burst represents the completion of the first half life Hence the difference in time between the reading of 20 r/hr (i.e. 2 hours after burst) and the time when the reading is 10 r/hr (i.e. 3.6 hours after burst) is 1.6 or the duration of the half life

Because 1.6 hours is the one half life and this is the period of time the men remain in the area we merely substitute in the FIT for half life rule the following 5 for F 20 for I 2 for T and 1/10 for the one half life By multiplying $5 \times 20 \times 2 \times 1/10$ we get 20 or 20 roentgens the total dose the men receive

DISCUSSION

In this system there are six radiologic rules of thumb as follows (1) The 2-4-6 rule (2) twice the time is one half the dose rate which is 10 percent too high (3) Twice the time which is 10 percent too high is one half the dose rate (4) The dose rate is the dosage for the following hour (5) FIT forever rule and (6) FIT for half life rule

This system compares with the rules cited in reference 1 as follows

1 The 2-4-6 rule There is no counterpart in the rules of reference 1

2 Twice the Time is One Half the Dose Rate Which is 10 Percent Too High The counterpart in reference 1 is the first rule "At the end of a period of time in the future equal to the time

since the explosion the dose rate will have decayed to one half of its present value

Table 2 compares the values obtained by each of the rules that is by the rule presented in this article and by its counterpart in reference 1, and then compares the values of both with those obtained by the graphical method (fig 1) Examination of table 2 reveals that in all cases my 10 percent correction factor rule more closely approximates the dose rates for different moments after atomic detonation as obtained by the graphical method This method is based on data derived from dosage and dose rate curves of residual radioactivity published by the Armed Forces Special Weapons Project and is therefore considered the criterion for accuracy

Certainly when the estimates by the twice-time rule and the graphical method agree within a roentgen or so the estimates are close enough but when there are differences of from 10 to 20 r (as shown in table 2) it is believed wiser to adopt the attitude of the less exposure to radiation the better Furthermore the slightly higher values obtained by the 10 percent correction factor rule is a desirable feature because it provides an automatic safety feature

3 Twice the Time Which Is 10 Percent Too High Is One Half the Dose Rate There is no counterpart to this rule in reference 1

4 The Dose Rate Is the Dosage for the Following Hour This is identical with the rule in reference 1

5 FIT Forever Rule Although the context of this rule is identical to that of its counterpart in reference 1, the expression FIT forever is a memory aid and easier to memorize than Third rule The maximum amount of gamma dosage which can be received in an area which has a dose rate (I) at a time (t) after the explosion is expressed by 5 times the dose rate times the number of hours since the explosion Or $5 \times I \times t$ is equal to the total dose from time (t) to infinite time

6 FIT for Half Life Rule Although here too the thought expressed in this rule and in its counterpart in reference 1 is the same nevertheless the application of this thought as described in reference 1 leads to values of significant deviation from the values received by means of the graphical method This is because in reference 1 the pure interpretation of the term half life is not applied instead a looser application of "half life" is used obviously in an effort to secure a simple rule This oversimplification can easily be avoided by the more accurate "twice the time is 10 percent too high" rule

TABLE 2 Comparison of dose rates for specified times as obtained by the first rule¹ The twice the time & one half the dose at which is 10 percent too high rule and the graphical method²

Dose rate recorded at one hour after detonation	Methods used	Estimated dose rates at specified hours after detonation		
		r/hr at 2 hours	r/hr at 4 hours	r/hr at 8 hours
1 000	FR	500	225	112.5
	TTR	450	203	90.5
	GM	430	195	85.0
500	FR	250	125	62.5
	TTR	225	101	45.0
	GM	215	98	45.0
200	FR	100	50	25.0
	TTR	90	40	18.0
	GM	90	39	18.0
100	FR	50	25	12.5
	TTR	45	20	9.0
	GM	43	19	8.9
50	FR	25.0	12.5	6.7
	TTR	22.5	10.0	4.5
	GM	22.0	10.0	4.2
20	FR	10.0	5.0	2.5
	TTR	9.0	4.0	1.8
	GM	9.0	3.7	1.7
10	FR	5.0	2.5	1.75
	TTR	4.5	2.0	0.9
	GM	4.2	1.8	0.8
5	FR	2.5	1.25	0.625
	TTR	2.2	1.0	0.45
	GM	2.2	0.95	0.42
2	FR	1.0	0.5	0.25
	TTR	0.9	0.4	0.18
	GM	0.9	0.38	0.18
1	FR	0.25	0.12	0.06
	TTR	0.22	0.10	0.045
	GM	0.22	0.095	0.043

First rule

Twice-time rule

Graphical method³

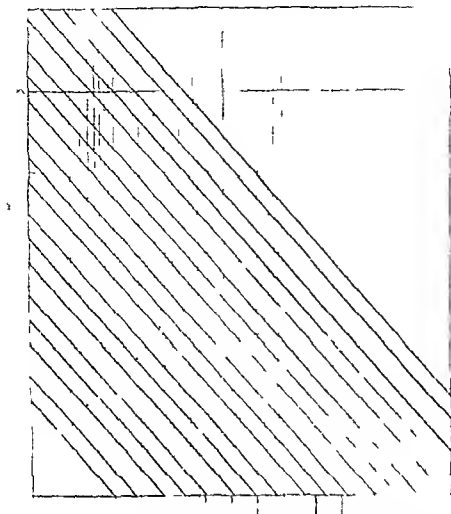


Figure 1. Dose rate graph obtained at any time after the tube is detected at any other time known. (R produced from Am d r r Sp I W upon P 1 ct D g d Do R t Cur s I R d I R d t ry Ba d on M It pl De ay / G Fl Pod ct graph 1 p 3)

The following illustrative problem is an example

The dose rate 2 hours after a detonation is 50 r/hr. What dose will be received at the end of 4 hours, 8 hours, 16 hours, 32 hours, and 64 hours?

The estimates for the time periods within 24 hours obtained by the fourth rule are from 14 to 90 r, lower than similar data obtained by means of the graphical method (as shown in table 3).

One might contend that a difference of about 20 r is "close enough" for practical purposes. However, one cannot deny the wisdom of the cardinal guide of *the less exposure to radiation the better*. The peacetime standard for radiation exposure is 0.3 r distributed over one week, a wartime standard might easily be 50 r distributed over the same period. It can be seen then that 20 r is 60 times the peacetime standard and represents 40 percent of the possible wartime standard. Furthermore, the problem cites the radiation which is received within 24 hours (*i. e.*, acute dosage), in contrast to the standards which relate to one-week periods (*i. e.* chronic dosage).

TABLE 3 Comparison of graphical method and fourth rule¹

Dose received at end of	4 hrs	8 hr	16 hrs	32 hrs	64 hrs
FOURTH RULE	50 r	100 r	150 r	200 r	250 r
Graphical Method	64 r	120 r	170 r	214 r	252 r
% Error based on the Graphical Method	-22%	-16%	-12%	-7%	-1%

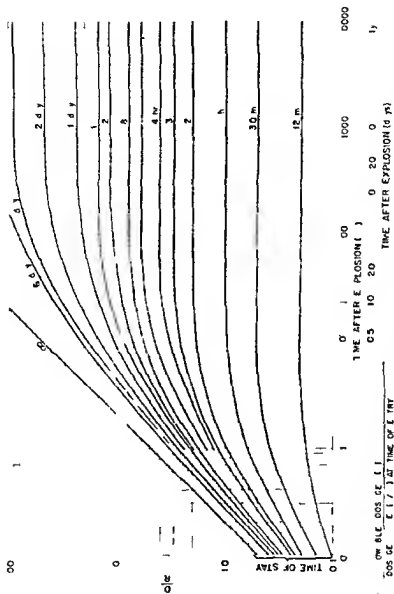
The solution of the above problem considers the moment four hours, eight hours, 16 hours, et cetera after detonation to be the completion of the first, second, third et cetera, half life respectively.

The moment after detonation that represents the completion of the first, second, third et cetera half life periods can be more accurately determined by the use of our rule of "twice the time which is 10 percent too high." This rule would cite moments 3.6 hours, 6.5 hours, and 11.7 hours after detonation to be the completion of the first, second and third half periods respectively.

In other words, if one applies the "FIT for half life" rule and considers the half life period to be that obtained by the use of the "twice the time which is 10 percent too high" rule, a "truer" relationship between the periods and the dosage received may be observed. Thus, in the above problem, personnel would have received 50 r at the moment 3.6 hours after detonation, 100 r at 6.5 hours, and 150 r at 11.7 hours.

CONCLUSION

The radiologic rules of thumb are of value in estimating the hazards produced by radiologic contamination from an atomic



$\Gamma_{\text{Eve}} \leftarrow D/R$ er us time iter pl f us dur ion f t y Graph d co j nct w th graph t i p bl m n-
 $\text{vol s t m ted d re}$ $\text{(Repod ed f m 4 m d Force Spec al We p P t D s d D R C rv f R d l}$
 R d c ty B sed $\text{M t t p l D y f G F 10 P od f s. graph 2 p 7)}$

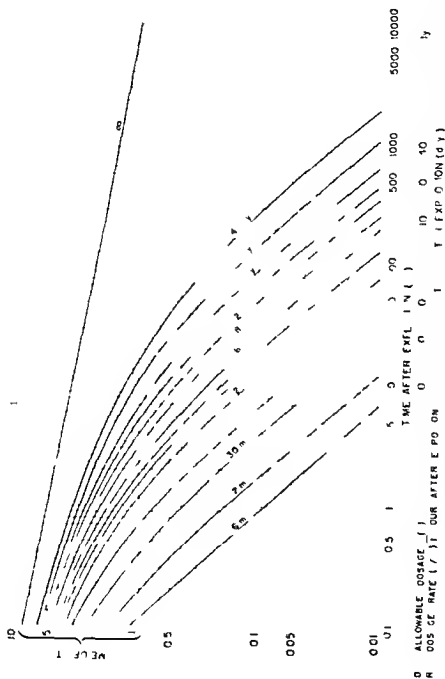


Figure 3. Dose rate versus time after explosion for various durations of stay. Graph used to determine the total dosage received for a particular duration of stay in a contaminated area the dose rate of which is known at the time of entry (Reproduced from *Atomic Forces Special Weapons Project, Dosage and Dose Rate Curves of Residual Radioactivity Based on Multiple Decay of Cross Fission Product*, graph 3, p. 11.)

weight of rosin. The phantom was constructed to permit access to points within the head for the placement of the ionization chambers (figs 3 and 4)

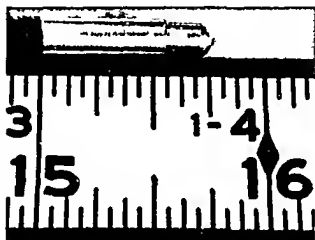


Figure 1. Small ionization chamber showing small (1) centimeter.

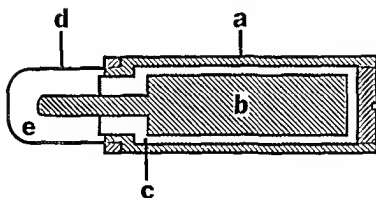


Figure 2. Schematic cross-section of head phantom. (a) Outer shell (b) Brain (c) Bottom (d) Thin rod (e) Ear (f) Head

EXPERIMENTAL METHOD

Ten points at which to measure radiation levels were chosen. Several of these were selected because they are located in areas rich in lymphoid or glandular tissue. Points at which overlap or intersecting planes of radiation might be expected were also included. These points were (1) at the skin of the neck when using the panoramic exposure and at the skin of the cheek when using conventional exposure (2) in the region of the sella

tubercle (3) in the region of the parotid gland (4) in the sublingual region (5) in the center of the base of the tongue (6) in the cornea of the eye, (7) in the region of the thyroid gland, (8) in the deep cervical lymphatic region (9) in a lower bicuspid tooth socket, and (10) at a point just posterior and medial to the lower



Figure 3 Wax phantom shows placement of ionization chamber at "skin of cheek and recessed location for measurements in region of neck lymphatics"

third molar. The last-mentioned location was included because the axis about which the beam of roentgen rays was rotated during panoramic exposure passed through this point. It was desired to determine if any excessive concentration of radiation occurred at this center of rotation.

Rate of delivery from the filtered roentgen ray source was about 558 milliroentgen (mr)/sec in air at 12 inches from the target when using the slit or narrow beam in the panoramic technique, and about 647 mr/sec in air at the same distance when using a round cone of rays for the conventional intraoral technique. Delivery rates were measured using the Sievert chambers.

Skin target distance was 8 inches when using the standard intraoral 14 film radiographic method and varied from 8 to 12.5 inches depending on the position of the roentgen-ray source at any given time in its cycle of motion about the head during

roentgenography by the panoramic method. Total exposure time was 25 seconds with the panoramic technique and 40.5 seconds with the intraoral method.

In each full mouth exposure included in this experiment, the conditions that would exist during actual clinical practice were adhered to. Standard load backed dental films were positioned in the phantom for each single exposure by the conventional technique. One series of 14 exposures was found to be sufficient to produce



Figure 4. Radiograph simulated for placement of ionization chambers in the phantom.

radiation levels at all measuring points falling within the range of the ionization chambers. It was necessary to repeat the exposure 10 times when using the panoramic method in order to obtain levels of radiation that could be reliably measured by use of the same chambers.

With the panoramic method the total skin surface area exposed to radiation at any point in the exposure cycle was less than 1 square inch. During exposure by conventional methods about 10 square inches of skin area were irradiated during each individual film exposure and overlapping of irradiated areas is unavoidable during a series of films required for full mouth roentgenography.

RESULTS

Levels of radiation measured at the points selected are graphically shown in figure 5. It will be noted that under the conditions of this experiment, the highest level of ionizing radiation during full mouth roentgenographic exposure with the panoramic technique existed in the cervical lymphatic region of the neck and amount-

PSYCHIATRIC REPROFILING IN BASIC TRAINING CENTERS

RALPH W CLEMENTS, Major MC USA

BERNARD J WEST Captain MSC USA

WALTER J GLEASON First Lieutenant MSC USA

THE Army Regulation which establishes standards for the physical profile for enlisted men is AR 40-115 dated 20 August 1948. Its title is Medical Department, Physical Standards and Physical Profiling for Enlistment and Induction. Paragraph 12 of this regulation gives the P U L L E S system or Physical Profile Serial Chart, the S section of which is entitled Neuropsychiatric. It specifies that a man with a mild transient psychoneurotic reaction or mild character and behavior disorder or borderline mental deficiency is given an S-2 profile.

The purpose of profiling is to allow the assignment of those with mild disabilities to limited duty. While the profile system is meant to be a useful guide in determining the work potential of a man, we must admit that in the field of psychiatry and this includes military psychiatry, the functional gradations between a person who is normal and one who has a clear cut psychiatric disorder has not been clearly defined nor classified. The matter is even hazier when the psychiatrist attempts to distinguish the normal from the mildly abnormal and then tries to assess the extent of the disability caused by a minimal abnormality. To make matters even more complex, the criteria separating the S-1 (normal) from the S-2 categories in the profile serial chart may be misleading if one thinks only in terms of diagnosis rather than of function. As soon as one begins to contemplate function as the basis for profiling, one starts to suspect that the difference between the S-1 and S-2 categories may be illusory in many instances and certainly extremely difficult to predict before a man has had even a trial of duty. In this connection, it is interesting to note that, in our experience, most military psychiatrists make little or no use of the S-2 category, preferring either to give a man no protection (S-1 profile) or maximum medical protection (S-3 profile). This neglect of the S-2 category is not universal, however, and leads to some interesting developments.

The induction centers generally fill up training divisions or centers within a specified geographical area with groups of inductees. A civilian coming up for induction or enlistment is given along with his routine physical examination a screening neuropsychiatric examination. At that time his complete physical profile is determined and recorded for the future guidance of training center personnel.

Late in November 1952, of a group of such men from one of the induction centers, the Third Armored Division Classification and Assignment Officer found that 103 men had S-2 profiles. The "S" category was the only portion of the profile rated below 1 for most of these men. These men with an S-2 profile created a difficult problem for him, because such men are not considered fit to be assigned a military occupational specialties code number for combat. The only sensible recourse locally available was to send them to companies conducting an 8 week basic training period (an abbreviated form of the 16-week cycle) and, on completion of the 8 weeks to one of the Army common specialist schools in order to fit them for noncombatant duties.

Those men formed the bulk of those admitted to the Army common specialist schools from the Division. Other considerations, such as the Division's need for specialists and requirements of the school for intelligence aptitude, previous civilian experience or motivation of the student soldier had to be relegated to a position of secondary importance. The Division could not send other men with normal physical profiles to the schools, even though their qualifications were often much better. To sum up, the psychiatrist at the induction center by his low profiling unwittingly had set up the major criterion for deciding whether a man be trained for combat or for combat-support roles.

The chief of the Mental Hygiene Consultation Service (MHCS) suggested a method of relieving this situation. After securing proper authority, all induction S-2 profiles were automatically changed to S-1 at this post.

This was based on the assumption that a man cannot properly be given an S-2 profile at the time of induction because the physician at the induction station has (1) little basis for making such a fine discrimination between an S-1 and an S-2 category, (2) a limited amount of social history on each man and consequently is unable to judge what a man's past performance has been, (3) many men to screen in a short time, and consequently cannot evaluate a man's psychiatric status unless there is a marked disorder of affect, ideation or behavior, and (4) difficulty in predicting the reactions of the men to the shades of environmental stress which will influence them during their Army

service. In the face of the above difficulties it would seem that, when it comes to giving an S-2 profile the decision at the induction station can only be a matter of guesswork or intuition.

DEVELOPMENT OF THE STUDY GROUPS

Following the automatic reprofiling the Classification and Assignment Office reassigned about 50 percent of the above mentioned 103 men to a normal 16 week basic training cycle. The others remained in the abbreviated 8 week cycle.

It was thought that a comparison of the adjustment made by two such groups would offer an opportunity to evaluate the wisdom of the profile change particularly because it is general opinion that men with mental or emotional disorders do not function as well in a normal 16-week cycle as they do in the briefer 8 week cycle. A statistical comparison of two such groups in regard to company character and efficiency rating and the incidence of sick call hospitalization referral to the MHCS courts martial company punishment, AWOL discharge from the Army and successful completion of basic training might help to confirm or dispel such an opinion.

EXPERIMENTAL METHOD

In this study primary records and basic training company evaluations were collected and analyzed. No interviews were held with the men concerned because it was thought wiser that they should not even be aware of the reprofiling. It was also assumed that those soldiers would within the 8 to 16 weeks of their basic training come to the attention of the Mental Hygiene Consultation Service if the reprofiling created difficulties for them.

As all men were assigned to the Third Armored Division from induction centers Classification and Assignment Branch immediately identified all those with S-2 profiles and prepared the profile changes to S-1 which were then signed by the chief of the MHCS. Within a few days Classification and Assignment Branch signed these men according to their individual qualifications and the needs of the Division. When we received this information we placed each man in one of the two groups depending on whether he was assigned to a 16 week cycle or an 8 week cycle. The assignment was made by Classification and Assignment Branch independent of any influence by us. The case samples consisted of 415 men divided into two groups: one with 199 and the other with 216. The former group was trained in an 8 week cycle followed by 8 weeks of schooling. In addition to their original S-2 profile 60 of the men trained in the abbreviated cycle had low profiles in other categories. The latter group was trained in a normal 16-week cycle. The training of these groups was pred-

out evenly from December 1952 to December 1953 so that seasonal variations had little influence on the results obtained. No matching was made of intelligence, urban or rural rearing, previous occupation, education or race.

Company contacts were made by one of us, a psychiatric social work officer. A psychiatric social work technician accompanied the officer for the purpose of screening company records while the officer held the evaluation interviews with a person in responsible authority in the company, usually the company commander. These contacts were made either two days before graduation or within the week after graduation. Information was obtained before the company commander was informed that the men originally had S-2 profiles. It was believed that this procedure, had little or no influence on the soldier's completion of basic training or on the company commander's evaluation. This company contact provided the material on the company commander's qualitative evaluation, as well as information concerning AWOL's, courts martial, company punishments, discharge, and success or failure of the soldier's completion of basic training. The morning reports (DA Form 1 dated 1 August 1951) were studied in order to obtain much of the company data.

The questions proposed to the responsible person in the company by the psychiatric social work officer in regard to the evaluation of each trainee were as follows:

1. What do you think of this trainee's character and efficiency? (Don't know, unsatisfactory, average or excellent.)

2. Did you attempt to utilize this trainee in any leadership capacity? (Yes or no)

3. If you tried this trainee in a leadership capacity, was he successful or unsuccessful in demonstrating leadership qualities?

4. Will this trainee successfully complete or has he successfully completed basic training, or not?

5. Do you think this trainee would be successful or not as a combat soldier?

6. Would you, or would you not, desire to have this trainee work for you after he has completed basic training?

Dispensary records were then examined. Trainees of certain companies regularly attended a single dispensary throughout their period of basic training. Frequency of sick call for each man was tabulated and note made of any hospitalization. At the hospital, dates of hospitalization, diagnoses and dispositions were secured. Discharge Branch, Third Armored Division, was then

asked for a record of all instances of discharge along with reasons for discharge. Finally the files of the MHCS were studied for the entire year under consideration. Those in the two groups who had been referred to the MHCS along with their final diagnoses and dispositions were noted. The collection of information from these sources supplied the raw data for this study.

RESULTS

In a number of the company contacts the investigator sought the company commanders' opinions of the trainees who formerly had an S-2 profile. For the most part they confirmed our general impression that the original profile would have prevented many inductees from becoming combat soldiers. To quote one officer:

No reason for these men having an S-2 profile. They are some of the best men in the company. This opinion was more prevalent among company commanders in the 16-week training cycle.

Generally one obtained the impression that morale both of cadre and trainee was better in the 16-week training cycle than in the 8-week cycle. The soldiers in the 16-week cycle seemed more eager, possessed more vitality, had more bravado and a more purposeful air. Being identified as part of a combat branch of the Army apparently exerted a beneficial influence. Closely allied to this was the impression that the commanders of the 8-week training cycle companies appeared to have had less basic interest in their men. The tacit attitude seemed to be that the trainee was already lost from a combat branch and hence future school success depended little on the 8-week basic training cycle. Therefore it appeared that only superficial concern was given to the points of training, especially those related to combat. On the other hand commanders of 16-week training cycles seemed to feel a direct responsibility for the man's successful graduation because they realized that what a trainee learned in basic training might later save his life, his company or his mission in combat.

Originally we thought that two company contacts for evaluation interviews in the 8-week cycle would be practical: the first at the end of the 8-week basic cycle and the second at the end of the schooling cycle. The first contact proved valuable but we soon found that the second contact at the end of schooling was of little use because in the school phase the company commander had little except administrative contact with the men. Furthermore because he might have as many as 500 men in his company it was practically impossible for him to make an individual evaluation of every man. We therefore discontinued company evaluations for the school period of those men who had been in the 8-week training cycle. The evaluation interview was the only measure that did not cover a 16-week period for the 8-week cycle.

group all other indexes sick call, et cetera, were for a 16-week period comparable to that of the 16 week basic training group. Sixteen men in the 8 week training cycle group had subsequent schooling at other posts making it impossible to follow up this segment of the group for any further investigation during their school training.

In obtaining company evaluation, it was first thought that only the company commander should be interviewed. This too was found to be impractical for various reasons. Consequently in revising the approach the concept of immediate rather than ultimate authority was used. This meant that any company officer, or the administrative or field first sergeant was eligible to give the evaluation. In many cases we discovered that a first sergeant's knowledge of his trainees was the best available in the company. The ideal evaluation situation encountered a few times, was the presence of the company commander, other company officers, the first sergeant and the platoon sergeant, all of whom contributed to the evaluation.

Most of the company commanders were junior officers and appeared to be in their early twenties and recently commissioned. It seemed that such younger officers had an eager individual interest in their men, and consequently based their evaluations on participating observation rather than on the fact that a trainee had come to their attention because of some particular deficiency or some outstanding quality.

When people other than the company commander gave the company rating an added difficulty was their occasional reluctance to divulge information if it might reveal a difference of opinion from that of the company commander. In all these cases, the person being interviewed was asked to inform the company commander of the team's visit and was requested to telephone us if there was any objection to the original rating. In no instance did anyone call to change an evaluation.

Company punishment, courts-martial, and AWOL figures were found to be of limited value. The company commander's attitude toward discipline as reflected by the data obtained in these categories was found to cause a large variation. For example, one company commander might conscientiously use company punishment literally, as directed by Army Regulations or local policy. Such a commander would have on record a large file of misdemeanors. Other company commanders, thinking perhaps that a large number of company punishments, courts martial, or AWOL's might reflect adversely on their competence as leaders, appeared to avoid the permanent recording of these events, and consequently would use their own unofficial methods of handling such situations. Further in some instances it was found that,

because company punishment records were destroyed as soon as a soldier was transferred out of the company the team missed obtaining these figures if they arrived even one day late. A certain number of these files were consequently lost to the study. Courts-martial figures were an added source of error. It was found that in many instances there was a considerable time lag between offense and ultimate trial. We believe that the records did not reveal a true picture because even though an offense may have been committed during basic training many courts-martial took place after graduation and hence could not be made a part of our records.

Other primary records required by Army regulations are the morning reports, dispensary records, hospital records, Discharge Branch files and MILCS files. These were the most reliable sources of information. Standard procedures led to fairly uniform recording and systems of filing differed little from office to office. As a result full and accurate information was obtained in all these areas.

TABLE 1. Chi square analysis for comparison

Characteristic	Observed	χ^2	p	Significance
Character difference	3	4.63	.20	Not diff.
Training lead	1	8.55	.01	More weeks (8 weeks) led
Side	1	0.02	.90	Not diff.
Complaints	1	1.50	.20	Not diff.
Emotional behavior	1	7.89	.01	More weeks (8 weeks) better
Derogatory work	1	0.37	.60	Not diff. acc.

It can be seen from table 1 that in certain areas there was no significant difference between the two groups. This table, however, does show two significant differences: more trainees in the 8-week group were given opportunities for leadership positions than were those in the 16-week group, and significantly more trainees of the 16-week group were considered likely to be successful in combat than were those of the 8-week group.

Table 2 shows that the 8-week group had a significantly higher rate of discharges than did the 16-week group, though the number discharged in either group was so small as to be hardly worth while analyzing statistically. All discharges were for medical reasons and none for clear-cut psychiatric reasons.

As indicated by the data in table 2, the only significant changes noted are that the 16 week group had a larger number of trainees who went on sick call more than five times, as contrasted with the 8-week group. The numbers involved, however, were small. Also, the AWOL rate is higher in the 16 week group than in the 8-week group. Again the increase is rather trivial, only six beyond statistical expectancy.

TABLE 2 *Chi square analysis of primary records*

Record	Degrees of freedom	χ^2	p	Significance
Discharge rate	1	4.00	.04	16-week subject discharged
Hospitalization	1	0.00	.99	Not different
MHC referral	1	0.01	.95	Not different
Sick call	1	1.17	.30	Not different
Sick call	1	7.89	.01	More 16-week subjects sick call
Commutational	1	0.13	.25	Not different
AWOL	1	6.25	.02	More 16-week subjects AWOL
Company punishment	1	2.39	.12	Not different

0 or more sick call visits
 *0 5 sick call visits

CONCLUSIONS AND DISCUSSION

In rating the trainees of this study the company commander had no knowledge of their previous S-2 profiles and was comparing them with other trainees in his company. In the 16-week training companies the subjects were competing with men who had had normal physical profiles from the very outset of their Army service, whereas those in the 8 week training companies were competing, in many instances, against men with acknowledged limitations. The data from table 1 indicate that the 16 week trainees compared just as favorably as did the 8 week trainees against their respective competition. It appears, then, from the viewpoint of the character and efficiency rating that men formerly profiled with an S-2 rating will function just as well in a 16-week cycle as will those in an 8 week cycle followed by school training.

Within the limitations imposed by the sampling of the present study and the relatively brief period of Army service concerned, the change of profile from S-2 to S-1 seems to have been justified.

For some reason not readily apparent, a significantly larger number of subjects in the 8 week cycle than in the 16-week cycle

are (1) relaxation of pharyngeal and laryngeal tissues which permit the tongue to fall back into the hypopharynx (2) improper positioning of the head and neck, (3) defective or improperly adjusted apparatus (4) anatomic abnormalities of the respiratory tract (tumor polyps scar contractures) (5) foreign bodies or excess secretions (6) laryngospasm or bronchospasm (7) inhibition of the respiratory movements of the thorax and diaphragm (tight cast, malposition "leaning on the patient," and other restricting factors). The treatment of respiratory obstruction is directed first of all toward localizing and eliminating the cause of the obstruction. The obstructing factor may be removed simply by repositioning the head or it may be complicated so as to require emergency tracheotomy to re-establish the airway that has become occluded by aspirated material laryngeal edema or neuromuscular or inflammatory lesions.

APNEA

Apnea or complete absence of respiratory movements can be due to a number of factors. It may be secondary to breath holding, a sudden overdose of a stimulating drug, laryngospasm, paroxysms of coughing or respiratory obstruction. Other factors to consider are (1) hypocapnia due to hyperventilation and subsequent lower p_{CO_2} of the carbon dioxide stimulus below the respiratory center threshold (2) high concentration of oxygen administered in the presence of oxygen want with discontinuance of carotid body effect on the respiratory center (3) neurologic disturbances such as increased intracranial pressure (4) cardiocirculatory failure with resultant central nervous system hypoxia, (5) overdosage of either anesthetic agents or supplementary drugs and (6) reflexes of autonomic or somatic origin. Voluntary swallowing movements accompanied by momentary cessation of respiration as seen in stage I anesthesia should not be confused with apnea from other causes.

All patients in apnea must have ventilation instituted immediately. This ventilation is best accomplished by rhythmic compression of the breathing bag every 3 or 4 seconds to ensure adequate tidal exchange. It is most important that a rational diagnosis of the existing condition precede further treatment. A calm approach to the problem is both essential and practical for with an adequate airway and stabilized circulatory status the patient will be receiving maximum supportive therapy until the cause of the apnea can be determined and corrected. It is in this early phase that most attempts at resuscitation in the survey made by Nouel and associates were deficient. Ventilation with oxygen was used early in only 10 of the 9 deaths reported in their survey and in 12 patients the only attempts at resuscitation were by manual compression of the thorax even though an anesthesia machine was available.

RESUSCITATION

If a primary circulatory collapse occurs, as evidenced by absence of pulse, blood pressure, or heart action, cardiac resuscitation must be instituted immediately. Care must be taken to distinguish primary circulatory collapse from the circulatory depression which occurs with an overdosage of anesthesia or severe overstimulation of the autonomic nervous system. If the apnea is due to an intracranial lesion it would be best to discontinue all anesthetic drugs, ventilate and oxygenate the patient, and continue surgery (with local anesthesia if necessary). The treatment for an overdosage of inhalation anesthetic is to establish respiratory and circulatory support as indicated. The anesthetic mixture and dosage received by the patient must be verified to rule out hypoxia caused by an excess of any agent. In the event of overdosage, the alveolar concentration of the anesthetic agent may be reduced by dilution with high flows of oxygen and repeated emptying of the breathing bag. Barbiturate overdosage is treated by providing respiratory and circulatory support until the agent is metabolized or eliminated. Overdosage of narcotics is treated in the same manner, and N-allylnormorphine is given to counteract the depressant effects on the respiratory center. Hypoventilation is not significant unless it is severe enough to affect the central cardiac pressor mechanism and is accompanied by circulatory depression. In the presence of marked hypotension carbon dioxide replacement may be necessary and can be accomplished by having the anesthetist exhale into the breathing bag thus supplying the patient with the necessary carbon dioxide. The apneic patient would also accumulate carbon dioxide but the associated hypoxia is hazardous to the patient. In the presence of persistent hypotension it may be necessary to use vasopressors.

The beneficial effects of respiratory stimulants such as carbon dioxide and many of the analeptics, are debatable. Analeptics, such as N-allylnormorphine and tensilon (N-ethyl-N-(*m*-hydroxyphenyl)-N,N-dimethylammonium bromide) are used for the specific displacement of morphine and curare thus relief of depression may be expected. Carbon dioxide and most of the other analeptics stimulate the respiratory center and increase the oxygen uptake, but do nothing in relation to displacement or degradation of the drug which is responsible for the acute depression. Following the initial stimulation of the respiratory center a secondary depression may be expected from the effects of the analeptic which intensifies the initial depression. Carbon dioxide may be used in the postoperative state to initiate hyperventilation in the prevention of atelectasis. In this instance, 100 percent carbon dioxide from a gas hose is administered by a completely open system. In this way the patient is stimulated to breathe more

THE MECHANICS OF MEDICAL MEETINGS

WARNER F. BOWERS Col 1 MC USA

THE IMPORTANCE of developing the ability to speak clearly, accurately, and convincingly in public should be emphasized in our residency training program. Also we should teach our residents the mechanics of preparing and conducting a medical meeting. Many of the young men will go out as chiefs of services in smaller hospitals where they will be required to arrange and present their share of the hospital staff meetings. Sometimes they may be requested to arrange a program for the local civilian medical society or to conduct a short course for medical officers. It is a great source of satisfaction to them and to their audiences if they do these things smoothly and well. The importance of this matter seems to indicate that a short discussion might be worth while.

PLANNING THE PROGRAM

In general there are five styles or types of program which can be chosen, each having its specific good points and shortcomings. The type should fit the needs of the occasion and it is well to vary the approach from time to time to avoid monotony.

One speaker. The simplest program consists of one speaker who delivers a talk on some specific subject. This type of program is excellent provided the speaker is skillful, the subject is of general interest, and the material is not too voluminous to condense. Usually a speaker cannot hold his audience much longer than 90 minutes, and actually 45 minutes should be the ordinary maximum. However, there are speakers who can hold a large group for three hours without restlessness. The inherent dangers are that the speaker may be a poor one, and it is almost impossible to find a subject of sufficiently wide interest to hold the attention of a mixed audience such as in a hospital staff meeting where various specialties are represented.

Several speakers. These pitfalls may be avoided by a program made up of more than one speaker discussing unrelated subjects. Here again the time limitations for maximum length are the same. The minimum length must be determined by the material and the speaker's ability, it being realized that it is easier to ramble for 20 minutes than to say it all and sit down in half that time. A good example of such a meeting is a program put on by a group

interested in clinical research, each outlining his project and giving its current status in seven or eight minutes. An excellent medium with wide adaptability is the *symposium* where some general theme or subject is given broad coverage by a group of speakers, each discussing the subject from his particular viewpoint. An example would be a symposium on duodenal ulcer with the psychiatrist discussing psychosomatic elements, the gastroenterologist presenting aspects of diagnosis and medical regimen, the radiologist giving roentgenographic findings, and the surgeon discussing indications for operation, technic, and follow up results.

The panel discussion. The fourth mechanism is the panel discussion which often is poorly done because the essential difference between a symposium and a panel is overlooked. The panel should be composed of authorities with diverse viewpoints or representing different specialties. One technic is to have each give some short, prepared remarks to orient the audience, then to ask for questions from the floor. The usual failure is to permit the panel members to use most of the available time in their opening remarks so that almost no time is left for audience participation. This in effect becomes a symposium rather than a panel. Probably the success of a panel rests in large part on the moderator. He can eliminate the opening remarks to good advantage, starting off directly with previously prepared questions designed to include the various panel members, to open up fruitful avenues for discussion, and to stimulate the interest of the audience. If properly done, there will be audience questions almost immediately and thus the entire time can be devoted to questions and answers. The moderator must keep things moving, prevent monopolization by one speaker, divert irrelevant material, smooth over points of disagreement, and see that answers are as conclusive and informative as possible.

The group discussion. Group discussion differs only in that the audience makes up the panel. This is a difficult technic to use with a strange audience because its success depends partly on an alert and at least partially informed group. It requires a very skillful moderator if one is to avoid disaster. However, even an apathetic or a hostile audience can be managed by the group-discussion method if the moderator can keep his temper and is thoroughly familiar with his subject. The group discussion method is not to be chosen lightly by the novice.

The matter of questions from the floor must be given thought. With one speaker questions will naturally come at the end of the program unless the meeting is extremely informal and the speaker invites interruptions. With the program made up of several short talks on diverse subjects, it is smoother to allow time after each

paper for regulated and pertinent questions. If it is desired to use a final discussion period for questions, care must be taken to group the questions for each speaker and to orient the audience to prevent confusion. This same technic applies to the symposium but with less force because the speakers all are concerned with aspects of the same problem. In the panel and group discussions the problem does not arise because the entire program is a question and answer period rather it is important for the moderator to summarize or correlate the material presented and the conclusions reached.

ARRANGING THE SCHEDULE

Proper spacing and allocation of sufficient time to each element of the program is of the greatest importance. Most papers can be presented in 20 minutes but it is risky to schedule a paper every 20 minutes without a short break to allow for introductions, the mechanics of lights and equipment, and most important, time for questions or discussion. In many instances the discussion provoked by the paper is more valuable than the paper itself. A good plan is to use 20 minute presentations with 10 minutes between papers for the purposes mentioned above. Even with these free periods it is well to bear in mind that it is difficult for the audience to sit still for a full half day. Especially if there are no question periods, a mid program break of 10 minutes should be allowed. If there are previously designated discussants, they must be allowed a definite time period to present their remarks, still leaving time for questions from the floor. The moderator has the essential but unpleasant duty of keeping the meeting on a time schedule. Meetings should begin strictly on time and each speaker should be held to the time limit of which he has been previously informed. Some speakers are so discourteous to those following as to utilize all their allowed time in talking and then they expect an equal amount of time to show their lantern slides. If the moderator permits one speaker to monopolize the time of subsequent speakers, those who follow are perfectly justified in declining to present their material with the simple statement that there is not sufficient remaining time in order to do justice to the subject. Finally, in an all-day session, sufficient time must be allowed for the audience to go to lunch, taking into account transportation time as well as time for eating. Usually an hour and a half is better than allowing just an hour. If there is to be an after-dinner speaker before resuming the session, time and place for this also must be carefully correlated.

DUTIES OF THE MODERATOR

The most obvious duty of the moderator is the introduction of speakers. Adequate introduction of a speaker is difficult and

has a number of aims. First, it should tell the audience who the speaker is, what he is from the standpoint of titles, where he hails from or where his work was done, and why, from the viewpoint of accomplishments in the field to be discussed, he is fitted to address the audience. Second, it must be sufficiently inclusive so that the speaker is relieved of the supposed necessity for reciting his own merits in order to be sure the audience is properly impressed. Third, it must avoid flattery or too flowery pronouncements which may embarrass the speaker by overstatement or inaccuracy. It is well to be careful of attempts at humor in the introduction of speakers unless they are well known to the moderator and he is sure of his ground. Finally, it is essential that the moderator remember the name of the speaker and that he pronounce it correctly. Some moderators feel called upon to deliver part of the speaker's address for him, or at least summarize his work. This is a reprehensible form of limelight grabbing.

Almost equally important is the moderator's duty to call time on long-winded speakers in order to keep the meeting on schedule. This has been mentioned previously, and if speakers decline to go on because the moderator has injudiciously allowed previous speakers to monopolize the time, the moderator gets what he deserves.

Managing the discussion period and the discussants is an art learned by practice. Here again the moderator must be time-conscious and must discourage irrelevance. Often, a discussant wishes to impress the audience by presenting a paper of his own, and here the moderator must limit discussion to the paper presented by the speaker. Critical and heated comments sometimes emerge and the moderator has the task of softening such criticism, encouraging humbleness from all concerned. Usually it is possible to give a verbal pat on the back before directing a well-aimed, figurative blow at the speaker or discussant who gets out of line. As a last resort, the moderator might suggest that participants agree to disagree, leaving the audience to make up its collective mind on the basis of material presented. Finally, the moderator should remember to thank the discussors, calling them by name if feasible. He should also thank the speakers, even though the talk has been a poor one, because at least the speaker took the time to attend. The moderator who makes a busybody of himself is a distinct nuisance and a real menace to the speaker. Such a moderator is the one who continually jumps up to adjust the microphone, change the lights, erase the blackboard, pull the shades up and down, or supply missing chalk and pointer. All these matters should be done unobtrusively and before the speaker begins his presentation. After that, interruptions should be kept to a minimum and limited to emergencies.

ADMINISTRATIVE ARRANGEMENTS

Much prior planning and administrative effort goes into the arrangement of a medical meeting. The arrangements to secure a speaker are presupposed but may require much correspondence. After this the scheduling of the program is necessary before the final notices can be sent out. This includes printing of suitable programs and release of proper notices to the press or organizations concerned. Physical arrangements include provision of a proper place, suitable equipment in the form of teaching aids which actually function and trained operators who can get the lantern slides in right side up. No detail is too small to arrange in advance: a burned out bulb may stop the meeting cold or absence of chalk may delay a blackboard lecture.

Sometimes there are multitudinous administrative arrangements if the meeting is to last longer than one day. Sufficient time always must be provided for registration of guests and administrative announcements. Facilities for housing, meals, travel, mail, phone calls, transportation, and entertainment need consideration.

SUMMARY AND CONCLUSIONS

A medical program should be planned according to one of the several styles discussed, choice depending on subject matter, type of audience, and other factors. Arrangement of the actual schedule should provide time for discussants, questions from the floor, a break to relieve the audience of monotony, and meals.

The moderator has a very important assignment in properly introducing the speakers, limiting the time to conform to schedule, directing the discussion, making things run smoothly, and yet keeping the spotlight on the speakers rather than on himself. Proper administrative arrangements plus a well organized program will ensure success.

MEDICAL MEETING

The Society of Military Ophthalmologists and the Society of Military Otolaryngologists will hold a joint dinner and business meeting at the time of the annual meeting of the American Academy of Ophthalmology and Otolaryngology in Chicago on October 11. All members are invited to attend. Applications may be made either to Captain James A. Stokes, MC USA, Walter Reed Army Hospital, Washington 12, D. C., or to Lieutenant Colonel Frank A. Perry, USAF (MC), 3650 USAF Hospital, Box 485, Sampson Air Force Base, N. Y.

ADDRESS TO GRADUATING CLASS

Army Medical Service Officers Advanced Course
Brooke Army Medical Center*

GEORGE E. ARMSTRONG *Major General MC USA*

ALTHOUGH one does not leave 30 years of service, associations, and comradeships without regret I derive comfort from the realization that, as a retired officer of the Regular Army Medical Corps, I remain a member of this great family and in some respects can continue to serve the cause of the Army Medical Service. I must admit, however, that the predominant feeling is that of pride—pride in having participated in the tremendous job that the Army Medical Service has done in the past. The Army Medical Service has not only given an excellent account of itself in providing medical support to the Army in peace and in war, but has grown in size, experience, and stature to where it is better prepared than ever to accomplish its mission.

It is natural that at this point in my career my thoughts are more on the past than on the future. We all enjoy reliving our experiences and can derive value from evaluating our past thoughts and actions. Things look clearer in retrospect when all the trivia are forgotten and only the essence of experience remains. I hope that I will be forgiven if I allow myself to think aloud about some aspects of my tour as Surgeon General of the Army.

All of you are career officers. Most of you are approaching the midpoint of your careers. This is the period where your training and experience reach a more advanced level. It is the point in your career where you attain leadership maturity. This is the stage where you begin to participate more directly and more actively in shaping the course of the Army Medical Service. The direction which the Army Medical Service takes at any time is determined by many factors, but none more important than the leadership given it at every echelon of activity.

I vividly recall the deep sense of responsibility I felt when I was informed that I had been appointed to succeed General Bliss as the Surgeon General of the Army. This sense of re-

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sponsibility will not leave me until the day I turn my office over to General Hays but at no time were there so many thoughts running through my mind so rapidly as at that time. What course was I to set for the service? What were the major problems? What were the important things to be accomplished during the next four years? How should they be accomplished? I had served four years as Deputy Surgeon General and was well acquainted with the workings of the office. I knew that soon I would become involved in day-to-day decisions of vital importance to the Army Medical Service with little time for the broader approach of outlining a long term course of action. At the same time I knew that it was essential to set a specific course which would provide background, direction and meaning to these day-to-day decisions.

The mission of the Army Medical Service has been expressed in many ways but it can be reduced to one basic aim—to provide the American soldier with the best medical care the country can afford. This has been the aim of my predecessors in office. It was my aim and I am sure it will be the aim of my successors. The Army Medical Service, however, is a very complex mechanism. It has many facets—field medicine, preventive medicine, inpatient care, outpatient care, research, training, supply, administration, and so on. It is dependent on varied and scarce resources—money, materiel, facilities, personnel. It is not a free agent—it is an integral part of the Army and of the medical and allied professions, and its course and operations must be closely correlated and integrated with that of the Army and to an appreciable extent with that of civilian medicine.

It is not too difficult to evaluate the mission of our Service in light of the Army strength, deployment and mission and therefrom derive a desired course of action. Objectives and policies for every facet of Army Medical Service operation flow normally and naturally from the basic mission and the situation. The problem is to translate the desired goals into realistic programs. Unfortunately, sufficient funds and other means are not and probably never will be available to achieve all we desire. The basic problem, therefore, is to keep a proper balance among the numerous activities involved in the accomplishment of the medical mission and the available resources. The best possible medical service is not achieved by advancing training of personnel and neglecting to provide a plant and equipment that will permit full use of this training. Conversely, the most modern plant and equipment will not provide good medical service without an adequately trained staff or corresponding advances in research. However, limitations of resources and many other factors often prohibit parallel development of interdependent elements of the Army Medical Service. This is particularly true during sharp changes in the environmental atmosphere from peace

to war to demobilization to cold war, et cetera. A proper balance between the various elements and facets of the Army Medical Service can be maintained only by periodically shifting emphasis from one to another so as to keep them in balance. Thus, setting the course for the Army Medical Service at any one time is primarily a matter of determining priorities among the many objectives that contribute to the accomplishment of the medical mission. The determination of priorities must take into consideration the achievements of the past, the most urgent problems of the present, and the probabilities of the future. The course of the Army Medical Service must be a continuous one, influenced but not interrupted by changes in the administration.

I should like to discuss the course set and some of the accomplishments made in the major areas of Army Medical Service operations during the last four years.

FIELD MEDICINE

Readiness for combat operations is the primary objective of the Army; support of the Army in the field therefore must receive the highest continuing priority among Army Medical Service operations. Combat operations in Korea provided an opportunity to test and modify our units, equipment, and doctrine. We tried to correct our mistakes on the spot. In addition, we have had a series of symposia evaluating the Korean experience in retrospect, and are incorporating the lessons learned into our tables of organization and equipment (TOE's), medical training bulletins (TB Meds) and other doctrinal media.

e Professional advancements in the treatment of casualties were many. Particularly significant were the advances in the use of plasma expanders and in the treatment of patients incurring burns and other trauma. The net advance can be judged from the results—the death rate was the lowest and the recovery rate the highest in the history of the American Army.

b Surgery was moved closer to the front lines than ever before.

c The Mobile Army Surgical Hospital (MASH) was fully tested and its use considerably modified.

d The principle of helicopter evacuation was firmly established.

e Other facets of Army Medical Service field operations were not overlooked.

(1) The use of assistant battalion surgeons (MSC) in battalion aid stations was reestablished and further advanced. (2) A medical intelligence detachment was included (in TOE 8 500) to fulfill the need for the performance of the medical intelligence

functions required by the Medical Service in the field (3) In 1954 a new veterinary hospital unit was established (as TOF 8 770 combining the capabilities of and replacing the old TOF 8 750 and 8 780) The new unit can care for small animals in support of infantry scout dog platoons and other security units which use small animals (4) The medical social workers both enlisted and officer were written into the table of organization and equipment of hospitals previously furnished medical social



Major General George E. Armstrong, MC USA, Surge General of the Army
from June 1951 to 31 May 1955

work through the facilities of the American Red Cross (5) All Army Medical Service tables of organization and equipment were reviewed and appropriate enlisted spaces were designated as noncommissioned officer positions to separate noncommissioned officer from specialist within medical TOE (6) All of the Army Medical Service equipment lists were revised The latest equipment and supplies have been included This includes new type field medical treatment equipment such as operating tables and lamps dental treatment units x-ray equipment and new type medical field chests Expendable supplies have been revised with a resulting reduction in total quantities carried by any unit

SUPPLY

I can state with confidence that the Army medical supply system has held a position of leadership over all supply services for a number of years. My objective was to maintain and, if possible, advance this position. I am happy to report that we have not lost ground. Some of the major achievements in the last four years are:

a. The Army stock fund and financial inventory accounting systems have been installed and extended to stations and overseas commands. The stock fund is a working capital fund for the acquisition and distribution of supplies. The Medical Service has been the first service to fully use the stock fund principle and others are now following.

b. Real unification has been achieved in the field of procurement development, standardization, and industrial mobilization planning for medical materiel. Although these triservice activities began in 1946, the Armed Services Medical Procurement Agency (ASMPA) has made great strides during the past four years. The Hoover Commission has recommended that ASMPA be used by all Federal agencies for procurement of medical items in the same manner as now done for the Federal Civil Defense Administration.

c. For the first time in the history of the Army Medical Service we have a balanced stockpile of medical materiel for a mobilization reserve. It is currently valued at nearly 100 million dollars, and it will greatly lessen the impact of any sudden mobilization.

d. Our operating hospitals have been furnished with standby equipment to fill any immediate expansion requirements. This plan also served to disperse equipment for any emergency. Additionally, a number of inactivated hospitals have had their equipment placed in "mothballs" for the same purposes.

e. We have developed plans and procedures for the supply of whole blood to overseas commands and for a national stockpile of plasma expanders. This program is also on a triservice basis for the Army, Navy, and Air Force.

f. Management procedures have been inaugurated in all medical depots, first by installation of comptrollership for control purposes, and secondly, by installation of a work progress reporting system and a cost analysis program.

RESEARCH AND DEVELOPMENT

To assure that the best possible medical care is provided our soldiers we must continually conduct research in all aspects

of military medicine To obtain maximum return from our resources for research we must make full use of the products of civilian research and confine ourselves to the research problems peculiar to the Army Some very significant advances have been made in the last four years

a Research in the repair of damage to major blood vessels reduced the amputation rate during the Korean war to 60 or 70 percent of the rate during World War II This produced a greatly reduced hospital burden returned normal instead of handicapped men to their families and saved millions of dollars in disability pensions

b The development of dextran as a substitute for blood plasma afforded the first effective cheap and relatively safe plasma expander Every unit of dextran procured in lieu of human plasma represents an average saving of 20 dollars

c The isolation of a group of viruses of which KI 67 is an example and which appear responsible for a large portion of acute respiratory disease is the first significant breakthrough in the study of the etiology of these diseases The control of this group of diseases would materially reduce the time lost by recruits during basic training

d The development of methadone hydrochloride as a synthetic substitute for morphine has relieved the United States of dependence on uncertain foreign imports of opium for the manufacture of morphine

e Primaquine is the first curative drug which has been found for the type of malaria most commonly encountered in our troops in overseas areas This agent almost eliminates the danger from carriers of malaria among returning troops It reduces military hospitalization time and protects our civilian population

f A successful prototype model of a portable x ray unit weighing 40 pounds that will provide roentgenograms in the field in less than five minutes has been developed Using the radioisotope thulium 170 as a source the unit will provide radiology service in forward combat areas where such service was not previously available for diagnosis of fractures and location of retained foreign bodies

g A new field type dental engine has been developed which weighs $1\frac{1}{2}$ pounds and can be operated off any vehicular battery as compared to the present standard engine of about 40 pounds which requires a generator for operation This new engine has a speed of 10 000 r p m (versus the 2 500 r p m of the present item) which increases the cutting efficiency of instruments decreases the patient's discomfort and saves the operator's time

TRAINING

The hub of the Medical Service is the professional and technical proficiency of its personnel

a The internship and residency programs for medical and dental officers serve a triple purpose. They constitute the most successful method for procuring officers for the Regular Army Medical and Dental Corps, provide the varied specialists essential to modern medical care, and raise the standard of medical service provided to our patients. The amount of internship and residency training given must of course be kept in line with the needs of the Army and with the facilities and teaching material available. The training program in our own hospitals has now been developed to a point where except for a few selected specialties, we have been able to eliminate our internship and residency training programs in civilian hospitals. The standard of our training program has been praised highly by the civilian leaders of the profession. The high teaching standards maintained in our hospitals are reflected in a flood of applications for internships and residencies. This enables us to select the best of the graduates from medical schools. The professional advancement of the Medical Corps can be judged from the following figures

(1) The number of board certified medical officers increased from 266 in June of 1951 to 429 as of 30 April 1954. (2) Sixty six percent of the Regular Army Medical Corps officers are currently board certified or board-qualified. (3) Another 16 percent are currently in residency training, bringing the total of those board certified or board qualified, or those in training for board qualification, to 84 percent of the Corps. (This is based on primary military occupational specialty (MOS) and may even be higher if we take into consideration secondary MOS data.)

b Important as is professional training, we must never lose sight of our basic mission, which is preparing our officers for staff and command responsibilities. This is particularly important as we lose officers with World War II and Korea experience and replace them with younger graduates. We have, therefore, placed continuing emphasis on staff and command training, as you in this class are fully aware.

c Training is a continual process. All aspects of professional and military training are therefore promoted and encouraged through hospital training programs and school courses. As examples of this type of training the course in surgery in acute trauma conducted in all class II hospitals received wide and enthusiastic acceptance. A course which brought military medicine up to the atomic age and therefore of particular signifi-

cance is the one on medical care of mass casualties offered at the Army Medical Service Graduate School

d We have not lost sight of the long range needs of the Army. A triservice medical scholarship plan has been developed and proposed to Congress to ensure availability of doctors and dentists for the Army in the future

e In view of the expansion of aviation activities in the Army we are training Medical Corps officers as aviation medical examiners. Also Army Medical Service officers already qualified as helicopter pilots are being trained in certain aspects of helicopter casualty handling

f The clinical technician has proved his rightful place in the Medical Service family. We have expanded the clinical technician's course to Letterman and Fitzsimons Army hospitals and are now graduating about 300 clinical technicians a year

g The Medical Education in National Defense (MEND) program was introduced into five medical schools at the beginning of the 1952-1953 academic year. The program designed to provide instruction in civil defense and military medicine is integrated into the regular medical curricula for all students

h During the fiscal year 1954 the medical and dental ROTC programs were discontinued as uneconomical and unproductive. It was recognized that the cessation of medical ROTC summer camps would decrease Army relations with medical college students and a substitute program was developed. The clinical clerkship program was introduced to fill this need. This program provides an opportunity for medical college students between their third and fourth years to be employed for 6 weeks at a U S Army hospital at a monthly stipend of 183 dollars. Each student clerk is matched with an intern at the medical installation and has an opportunity to become familiar with medicine as practiced in Army hospitals. This medium provides for continuing good relations with medical colleges and medical students and operates as a procurement device for the Regular Army Medical Corps

i In line with our basic mission, high priority has continually been placed on all aspects of field training. The Surgeon General was made responsible for the conduct of logistic exercise 1955 (LOGEX 55). I designated the Commandant, Medical Field Service School as maneuver director for this exercise. A number of Army Medical Service officers were assigned to the staff of the maneuver director for LOGEX 54 to gain experience for this task

j Professional and technical proficiency alone are not sufficient to produce the best in medical care. Interpersonal relationships play an important role in the care of patients. A pamphlet

entitled "Interpersonal Relationships in the Care and Management of Patients" was developed which contained material for 1 hour of formal instruction emphasizing that courtesy, consideration, a sympathetic approach, and the golden rule are the keys to the problem of successful interpersonal relationships

k During the past 2 years we have introduced into our schools some 15 new courses embracing the entire range of military medicine, and designed to meet the needs of both officer and enlisted personnel these courses illustrate the aggressiveness with which the Army Medical Service has attacked the problem of improving its professional, technical, and military training

MANPOWER CONTROL

The best-trained personnel are of little use unless they are in the right place at the right time The Surgeon General has had control over the distribution of his professional personnel for a good number of years I continued the policy of making professional personnel assignments on an individual basis, giving full consideration to each officer's career pattern and personal desires as well as to the needs of the service The most important advance in personnel management during the last 4 years has been with regard to medical enlisted personnel The two gains most worthy of note are

a Creation of Medical Records Specialist (MOS 1305) This enables the retention in the medical service of personnel trained and experienced in medical records, reports, and statistics

b Development of close co-ordination with major commands in the assignment of key medical enlisted personnel A proposal to establish Army wide centralized assignment control of senior noncommissioned officers, including those in the medical service, is under consideration by the general staff

MANAGEMENT

You have heard about, and many of you have had experience with, the large variety of management programs introduced in the Army in the last few years We have made full use of these ideas, improving them and adapting them to the needs of the Army Medical Service, which is a large and costly enterprise I believe that management of this enterprise must keep pace with its growth and development Every dollar and every person saved in one area can be fully used in another to improve and advance the Medical Service

a I have already mentioned the Army stock fund and financial inventory accounting in relation to the medical supply system We have been testing the industrial fund integrated accounting, and some other programs at Valley Forge and other hospitals,

and are slowly but steadily advancing in our plan to extend the financial management program to the entire Army Medical Service

b I am proud to report that we were the first technical service to extend the Department of the Army Primary Program System both at headquarters level and in the field. The Army Medical Service Program Document has now been in existence for over a year and represents in writing the complete and coordinated programs governing all facets of operation of the Army Medical Service. Much is left to be done to complete the change over from our old system of controlling and directing Army Medical Service operations to the Program System, but more than a start in that direction has been accomplished.

c I am also proud to report that we had introduced many aspects of management engineering in the Army Medical Service long before the term was accepted as a byword in the Army. It has been used successfully in supply management and hospital operations for a number of years. It has now been extended and expanded throughout all elements of the Army Medical Service. Perhaps the most noteworthy accomplishments have been

(1) The development and improvement of standard organizational structures for both Class II and Class I hospitals. (2) The development of doctrine and methods of reducing hospitalization loads through the treatment of patients on a clinical basis. (3) The successful experiments in centralized ward food service. (4) The development of guidance for use of clinical technicians. (5) The development of standards and factors for personnel staffing. (6) The introduction of modern business machines and devices into our installations and activities.

PLANT

The weakest link in our long chain of activities and resources at the time I took office was the condition of our plant. During World War II hospital facilities having been built on a temporary basis deteriorated rapidly. However as long as facilities were available and funds were tight replacement of these facilities was not permitted in the Army. The Korean situation created a need for hospital beds and other facilities at a number of posts. A plan to meet this need through construction of permanent hospitals was developed but repeatedly met with obstacles. I made it a matter of the highest priority to put this plan into effect. We were finally successful in convincing The Army Staff, The Department of Defense, The Bureau of the Budget and Congress that it was in the interests of economy and good medical care to begin replacing outworn facilities with permanent structures. The situation at present is somewhat as follows:

a Hospitals at Fort Knox and Fort Belvoir are under construction. Hospitals at Fort Bragg, Fort Benning, Fort Monmouth and

Fort Riley are scheduled to be under contract by the end of this fiscal year

b Construction of a hospital at Fort Dix has been approved and will most probably be initiated next fiscal year

c The Armed Forces Institute of Pathology is now housed in a new modern building at the Walter Reed Army Medical Center

d Many new facilities to meet various needs, such as nurses' quarters, barrack buildings, laboratories, holding facilities for animals, and medical warehouses have been or are being constructed at many of our installations and activities

e It is realized that so huge a replacement program as is required cannot be completed in a few years. In the meantime, we must continue to operate in many temporary buildings which have seen considerable wear. An additional problem has been created by the fact that the sharp drop in the hospitalization rate, combined with the contraction of Army strength, has reduced patient loads far below the original capacity of any of our hospitals. This means scattered operation. At the same time, the increase in dependent care has made many of our obstetrical facilities inadequate. To the extent that funds could be made available, rehabilitation of facilities to meet the most immediate needs and to consolidate operations has been carried out in many of the hospitals.

HOSPITAL OPERATION

I have left hospital operations for last because it is the recipient of, and in itself embodies, the advancements in supply, training, manpower control, management, plant, and other facets of our activities. The advances made in hospital operations can be summed up in two figures. The hospitalization rate—that is, the number of beds occupied per 100 troop strength—has decreased from over 2 percent in 1951 to 1.1 percent at this time.

RELATIONS WITH OTHER AGENCIES

I must not forget to mention one very important advancement during the last four years. The Army Medical Service has many special and unique problems. Procurement of medical professional personnel is perhaps the most acute of Army procurement problems. The health of the Army depends on close integration of preventive and therapeutic medical activities throughout all echelons of command. For example, the hospital system to be effective must be operated as a totally integrated system. To an appreciable extent the operation of the Army Medical Service must be closely co-ordinated with parallel services of the Air Force and Navy, with other Federal services, and with civilian medicine. This takes administrative shape in the segregation of medical problems from other problems at practically every

echelon of Government—Assistant Secretary for Health and Medical at Department of Defense level Medical Branch at the Bureau of the Budget level separate representation at Presidential level (Doctor Rusk) separate consideration at Board and Commission level (such as the Hoover Commission) and so on All of this often results in dealing with Army Medical Service problems within the Army as an exception and deviation from normal Army staff and command relationships Although these factors are fully recognized by all concerned they could readily precipitate what might be called relations problems As I have mentioned previously the successful accomplishment of the medical mission depends on close co-ordination and co operation between all elements with an interest in the Army Medical Service I have been very conscious of this fact throughout my tour as Surgeon General of the Army I am happy to report that relations between the Army Medical Service Army Staff the Office of the Secretary of Defense the Bureau of the Budget higher governmental bodies and civilian medicine have never been better than at present We are truly working together We may have differences of opinion at times but we have all learned that our end goal is the same and that we can and should find a mutually acceptable course

CONCLUSION

To have rendered an account of my stewardship to this group here seems to me particularly appropriate As of today you officers will begin to assume an increasingly important role in establishing the future course of the Army Medical Service By the same token you will be charged with the responsibility for maintaining that course

The advances made during my tenure as Surgeon General should not be attributed to me nor would it be proper for anyone to infer that their accomplishment was due solely to my stimulation To repeat once more a thought that has been expressed in one way or another many times The progress of the Army Medical Service is a continuing process in which past accomplishments inspire us to the solution of present problems in which we must avoid the mistake of living in the present and in which we must anticipate tomorrow's problems with an overwhelming confidence in our ability to furnish tomorrow's solutions It is my fondest hope that I may have aided in accelerating that process The happy circumstance of striding forward in seven league boots has not always been our lot but we have consistently fought to shore off the leg irons of stagnation

Four years ago I was named captain of a strong well conditioned winning team a great honor indeed But surpassing even that is the honor and pleasure that has been mine in being a member of this wonderful family of ours for the past 30 years

THE BATTALION SURGEON

DOUGLAS LINDSFY *Lieutenant Colonel MC USA*

THE TASK of battalion surgeon is one of the most important and, at the same time, least understood in the medical service. Of all medical officers, the battalion surgeon is the most appreciated by his prospective patients. The duty is least appreciated by the prospective incumbents.

Certainly the position is surrounded by more confusion and contradiction than any other medical officer position that I know of. The confusion is both amusing and alarming. In a short span of time you can hear such conversational mirror images as those

We need the best men in the forward medical installations

We need two Medical Corps officers in the battalion

The battalion surgeon is the key officer in the field medical service

The battalion surgeon must have good surgical judgment

As a battalion commander I couldn't do without my Doc

We can't use him for anything else—send him to a division

A professional officer is wasted on battalion duty

We can dispense with the battalion surgeon more readily than any other Medical Corps position

The battalion surgeon is limited to the performance of first aid

No need to call the Surgeon—he is not concerned with this plan

Most of the conflicting opinions which I would place on the erroneous side of the table appear to come from those who know the least about the job. They are from people who have never been a battalion surgeon, or have never seen a good battalion surgeon work. Some of the opinions which are sweeping assumptions pertaining to professional functions are offered by those without professional background. But there are some flagrant exceptions. Even the battalion surgeons themselves may differ.

I don't like the living conditions. I don't like being shot at—and I surely would like to be in the operating room again—but I can't think of a place where I could do more good.

I'm wasting my time here.

I have observed some battalion surgeons who completed their combat tour and rotated without ever having learned what their duties were

Frankly I am at a loss to explain why the uncertainty and the inconsistency exists When I went to my first assignment as a battalion surgeon I knew pretty well what to expect I had been told about it at the Medical Field Service School My expectations were realized Through four succeeding battalions (two in the states and two overseas) I learned a little more each time about *how* to perform the duties of the position but I never got any indication that my basic conception of the position was wrong

My own days as a battalion surgeon were ended after World War II But during the war in Korea I was fortunate enough to have duty that permitted me to spend a considerable amount of time in and around aid stations Because battalion surgeons rotated more frequently than did staff officers in rear headquarters I had the privilege of talking to battalion surgeons numbering in the hundreds I still have essentially the same concept of the battalion surgeon that was presented to me in my own initial training The only change is that the job has gotten bigger matching the increasing complexity of modern medical science and modern warfare

Today it appears that too few people have this same picture

When did the basic concept change? Or has it changed at all?

Who is interested in promoting a depreciation of the importance of the battalion surgeon? Or is there anyone interested in doing so?

And when did the Medical Field Service School start teaching a doctrine different from the one they taught me? They did not The teaching is the same today

Yet we are hearing a great deal more about the limitations of the battalion surgeon's job

If too few people understand clearly what the battalion surgeon is actually supposed to do then it may be worth while to review his duties

The battalion surgeon is responsible to his commander for the treatment of casualties on the battlefield by aidmen he has trained—and their collection and evacuation to the aid station by litter bearers under his control

He treats and returns to duty those casualties whose wounds are amenable to definitive treatment in the forward area

He initiates the professional medical treatment of those who must be evacuated to the rear and evacuates them in the best possible clinical condition

He is the medical advisor to his commander

He is the physician for a community of a thousand men living in a primitive environment and engaged in a hazardous occupation

He commands the medical detachment of the battalion trains it and directs its employment

This is nothing new to anyone. But it seems that it is not alone enough to spell out the scope of the responsibility and the degree of importance of the task.

All in all, the job of the battalion surgeon is to conserve the fighting strength of the battalion. This may be the clue. The less serious the wound, the greater the potential for salvaging a fighting soldier, but the more subtle and more intricate the medical decisions involved. The more serious the wound, the more evident the diagnosis and the clearer the basic plan of treatment, but the more important are the tough and go quick decisions and little modifications of treatment that make the difference between saving and losing a human life.

Here are my own ideas on "who is the battalion surgeon?" and "what does he do?"

KEYSTONE OF THE FIELD MEDICAL SERVICE

The battalion surgeon is the least dispensable person in the medical service. Yet if we lost him the loss would not be readily evident in the popular statistical measures of medical service. More patients would die before reaching hospitals, and fewer would die in hospitals. Too many of us have forgotten that the hospital receives only those patients who have been successfully treated by the battalion surgeon. The patient who dies in the aid station or forward of the aid station, does not appear on the mortality rolls of the surgical hospital. But every patient who dies in the hospital represents first of all the success of the battalion surgeon (albeit often temporary or partial success), and the failure of the hospital. On this matter I quote Brigadier General L. Holmes Ginn, Jr. a good physician who has devoted his career to field medical service. "It is very seldom that a life is saved in the rear of the battalion area" and "The life lost in the battalion aid station is never restored in the elaborate hospitals in the zone of the interior."

More than any other medical officer, the battalion surgeon can influence the course of battle by returning selected wounded men to duty. A good battalion surgeon can treat and return to duty

from the battalion aid station some 30 percent or more of the wounded. This is not a theoretical textbook figure. It represents the average aid station WIA return to duty rate of selected field units who were known for their good medical service. This result is not automatically attainable. In some divisions and battalions it has been as low as two percent. In these units the other 28 percent usually gets returned to duty sooner or later. But a trip to the regiment and back takes a day or not less than half a day. A trip to the clearing station and return measures several days. And this time is lost at the moment it is the most valuable—at the height of the battle. The squad or platoon needs its replacements now, not tomorrow night or next week when it is in reserve. The battalion surgeon can furnish one third of the replacements it requires. Best of all, he can furnish *trained* replacements who will not be faced with the problem of integrating their individual skills with the function of the team. Each man fills his own vacancy.

Besides the immediate salvage of one third of the battle wounded, the battalion surgeon can return to duty from the aid station one half to two thirds of the neuropsychiatric casualties.

The man who can perform these feats is indispensable to the medical service. But isn't this an easy task? Couldn't this be done well enough by technical or subprofessional personnel? The answer is no. Surely we do not wish to leave the decisions in the treatment of neuropsychiatric patients to a technician or to aggravate or fix an otherwise transient and reversible neurosis by changing to an arrangement that requires evacuation of all these patients to the rear. For the wounded the answer is more definite but perhaps less evident. The application of a splint to an obviously shattered extremity is a job that can appropriately be delegated to a trained layman. The decision as to whether a 3 mm laceration above the nipple can be dismissed with a band aid, a tetanus shot, a Purple Heart and reassurance or whether it means a chest tap and a call for a helicopter can legally and ethically be made only by a physician. Beyond rules and codes the decision can be arrived at only on the basis of professional training and experience.

DUTY IS PROFESSIONAL

The first time that I heard the pronouncement that the battalion surgeon practices only first aid, I was sympathetically embarrassed for the speaker's ignorance. As I heard it more and more I became mildly irked. Now I openly rebel.

As I recall it, I had a pretty good working knowledge of first aid between the ages of 12 and 20. But when, as a junior medical student, I put on a white coat and took a job in the emergency

room of a small private hospital to spend my budget with free meals of red beans and rice, I began to learn something that was entirely different. Since the time I finished medical school I have administered little first aid, but I have practiced a good bit of traumatic surgery under field conditions. Is a tracheotomy "first aid," even if it is done with an unsterile scalpel under the headlights of a jeep? It has been done by an aidman, but is this the rule or a distinctly unusual exception? When a patient walks into the aid station complaining of pain in the left shoulder after a truck accident is it "first aid" when you diagnose a ruptured spleen? And we may even consider the less dramatic cases. I recall one instance of a simple foreign body in the eye. We were on a troop train. A patient was referred to an aid station located in the coach carrying the medical detachment and battalion headquarters of an infantry battalion. The battalion surgeon instilled tetracaine hydrochloride. He sharpened a toothpick into a flat spud, dipped it in alcohol, and let it dry. He used it to spud out all the fragments of a cinder which was well embedded in the cornea. He bandaged the eye and followed the patient closely for several days.

Was this "first aid"? Read the *Field Manual 21-11, Training Manual 8-230* and the American Red Cross' *First Aid in Illness and Injury*. What would have been the procedure of first aid for the handling of an embedded foreign body? The train would be stopped at the next station. The patient would be put off and sent to a hospital. Days would pass before he would catch up with the unit. And that particular patient happened to be the division surgeon!

Anyone who holds that the battalion surgeon can only administer "first aid" has a bizarre definition of the term. Or if his understanding of first aid is correct, and he really means to say that professional talent is not utilized in the aid station, I can only guess that he has never been a battalion surgeon. Occasionally I have heard a battalion surgeon complain legitimately that his professional talents were wasted but he actually meant his specialty talents. The strongest example of this that I have seen was the board-certified ophthalmologist who somehow wound up in a battalion aid station near the end of the war in Korea.

As I have mentioned, there are a few battalion surgeons who will complain that their basic medical professional talents are not required. The few times I have heard this it was from surgeons of battalions who had been long in reserve, or on line on a very quiet front. And in each instance I think that the division surgeon failed in one of his most important duties—that of selecting for battalion surgeons men of initiative, judgment, and, if possible, experience in the surgery of trauma. Certainly the division and

regimental surgeons concerned failed in their duty to train and supervise the battalion surgeons under them

I often think back to the exemplary actions of three officers who were the very best all around battalion surgeons I have ever known. After I had seen them work in their aid stations I became interested enough in their backgrounds to look up their records. One had had three years of formal training in obstetrics before he went to an aid station, one was a research internist and one was board eligible in surgery and asked for aid station duty pending a vacancy in a surgical hospital. If the job of the battalion surgeon is "first aid" it is strange that it takes a highly skilled professional officer to do it really well.

BASIC DUTY IS SURGICAL

In peacetime and to a lesser extent when the battalion is in reserve status in the combat zone the professional function of the battalion surgeon is comparable to that of general practice. But it is a basic premise that the function of a military unit is to fight or to be so well prepared to fight that a potential enemy knows that he will be beaten and consequently does not force an issue.

In combat the battalion surgeon is engaged in the management of patients who have sustained formidable trauma. The photographs of a battalion aid station in action bear virtually no resemblance to a surgical amphitheater or even to a hospital emergency room. But the patients and procedures are surgical. Certainly the aid station bears even less resemblance to the medical clinic, the obstetrics ward or the waiting room of the family physician.

HE IS NOT PROFESSIONALLY LIMITED

The system of echelons of maintenance within the army is not based on *how much* or *what type* of work is done at each echelon but primarily on *who* does it.

In the starkly simple words of the manual the battalion surgeon is supposed to initiate the professional treatment of the casualty and prepare him for evacuation. These are pregnant words. Before the casualty is ready for evacuation everything must be done for him that is necessary to be done to insure that he is prepared to survive the trip to the rear and will arrive at the rear medical installation in fit condition to withstand the treatment procedures which will be carried out there. It is unfortunate that the writers of the manual saw fit to use the word "restricted" to put over their point that the most frequently performed procedures in the aid station are designed for the control of hemorrhage, the immobilization of fractures and the treatment of wound shock. (FM 8-10 par 63 b (3))

These are not easy things to accomplish, particularly the broadly inclusive problem of the management of shock. They may require some heroic or delicate, though not elaborate, surgical procedures. The battalion surgeon may do venipunctures or cut downs on all four extremities in order to infuse blood and plasma expanders at a life saving rate. He may cannulate the femoral vein. He may risk removing a tourniquet in order to effect better homostasis by clamping or ligation. He may have to make successive chest taps in order to judge whether a patient can survive evacuation without bleeding to death into his pleural cavity. He will do tracheotomies—to insure adequate respiratory exchange in a patient with cerebral trauma—to establish an air way in a patient with a neck wound—to permit packing of a bleeding oropharyngeal wound, or even just to make reported tracheobronchial suction more dependable.

The only real limiting factors in the extent of treatment at any medical installation are the professional ability of the medical officer, his equipment, and the implications of the tactical situation.

Whatever must be done to ensure the life of the patient during subsequent evacuation, that the battalion surgeon must do if it is within his professional ability and the equipment he has at hand. And he has good equipment. I have been on emergency room duty in university hospitals and major military hospitals. With a very few exceptions I believe that the battalion surgeon has equipment just as adequate. He has tubes and catheters, oxygen and lights, sterilizer and splints, otoscope and ophthalmoscope and needles, syringes, clamps, and sutures. For suction he will have to use the ear syringe with a catheter, or requisition an asepto-type syringe, or rig up the windshield wiper vacuum line of the jeep. If I were going back to duty as a battalion surgeon I would take my own personal stethoscope, whose ear pieces have been worn to fit me, and my own personal head mirror and laryngeal mirror. And I would immediately requisition some favorite medications and minor items of expendable equipment. This latter is something many medical officers do not realize. If they need a 3 way stopcock they do not have to wait several years for a recommended change in table of equipment to be processed. The item is in the catalog, it is expendable, it can be requisitioned.

HE IS NEEDED IN PEACE OR WAR

The battalion medical detachment has a professional mission. It cannot prepare for that mission without professional guidance. This is a basic requirement, but there are others that point to the need for the battalion medical officer in the unit in general reserve as well as the unit in combat.

made time and time again that an executive who devotes his primary attention to housekeeping, is not helping his commander shoulder the load

Similarly the command and administration of a medical detachment is no great burden. It is a minor part of preparing the unit to give medical service to a battalion in action and in keeping that medical service running smoothly when the pay off comes

DUTIES RELATED TO TACTICAL ACTION

This relation is sometimes obvious and straightforward some times subtle and indirect

An aid station location which is ideal in all other textbook requirements is not ideal or even satisfactory unless it is so related to the tactical operations of the companies that it actually provides them with effective medical support. Medical service is not automatic. It cannot be stockpiled and requisitioned. It cannot be delivered on call. It must be planned and the planning must be continuous in order to keep the medical support up-to-date in a constantly changing situation

The battalion surgeon must be a bona fide member of the battalion. He cannot be a transient visitor or a civilian consultant under contract. Unless he feels that he belongs to the group he serves he will not endure the hardships and danger and expend the extra effort that the best service to them requires

JUDGMENT DEMANDED

We have much to learn from the medical service of the Marines. They have two medical officers in the infantry battalion and they use them well. I have never heard the junior of the two complain that he was not needed or that his duties were administrative. Most of the company grade medical officers are given experience in aid stations before they go back to positions in the medical battalion

The reason I bring up the Marines is to quote their teaching on judgment. The battalion surgeon must retain coolness and calmness and must show a near perfection of surgical judgment under the most adverse conditions. Surgical judgment is that indefinable but essential attribute compiled of just the right mixture of a stable nervous system, past surgical experience, common sense and an ever ready diagnostic ability. It seems the needless sacrifice but wars are won by sending the best men to the front for only the best possess the essential qualities necessary to ensure victory. Like the legendary criterion of the good army rule (a kindly look in the eye) surgical judgment is difficult to describe but easy to discern

The battalion surgeon is faced with the necessity of making surgical decisions in major traumatic cases with a rapidity and frequency that is never seen in private surgical practice. But some of his most difficult decisions are the smaller ones. I recall the case of a lieutenant who twisted his ankle when he stopped in a hole in the dark. The ankle was badly swollen and painful. In civil practice the first step would have been to have a roentgenogram made, but in this instance it would have required at least 6 hours of the officer's time. And this officer was needed in less than an hour to adjust and control the mortar preparation preceding an important attack. The judgment of the battalion surgeon was for sprain, and not fracture, and for initial treatment by strapping instead of cast. The officer was delivered to his observation post by litter jeep, minus a boot, and plus an adhesive plaster splint. He fulfilled his mission.

Can we pass the responsibility for such decisions to a man trained in "first aid"? Or can we even pass such responsibility to one of our less experienced or less decisive physicians?

In summary the battalion surgeon is the most important man in the field medical service. He must be the best professional man and the best medical soldier of the medical officers we have available.

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PENALTY FOR POOR PENMANSHIP

Druggists and the examiners of the Royal College of Obstetricians and Gynaecologists are taking steps to make British physicians improve their handwriting according to the *London Daily Express*. Tired of the traditionally illegible penmanship of doctors the examiners say that physicians who seek diplomas will lose marks for bad handwriting. Examiners now make it a point of professional honor to avoid penalizing applicants for poor penmanship.

The pharmacists complained that physicians' prescriptions as a rule were so difficult to read that dangerous dispensing mistakes easily could be made. The paper stated:

—From GP p. 133 Sept. 1953

CASE REPORTS

Fulminating Meningococcemia and Meningitis With Vascular Collapse

Report of a Case of Waterhouse Friderichsen Syndrome
With Recovery

SANTINO J LERRO C I I MC USA

ACUTE FULMINATING meningococcemia marked by petechial eruption and bilateral adrenal hemorrhage and now known as the Waterhouse Friderichsen syndrome was first described by Voelcker in 1894. This syndrome was subsequently reported by several observers before the report of Waterhouse in 1911 and that of Friderichsen in 1918.

Waterhouse reviewed 14 cases from the literature and described rapid breathing and cyanosis in his own patient. Friderichsen in describing this illness in a six month old child noted cyanosis, coma with Cheyne Stokes respirations and a petechial rash that changed to purpuric patches before death. Small gram negative diplococci not identified as *Neisseria meningitidis* (meningococcus) were obtained from postmortem blood culture. Microscopic examination showed considerable hemorrhage in the adrenal gland most severe in the zona reticularis and the central part without evidence of necrosis.

In 1916 MacLagan and Cook associated *A. meningitidis* with bilateral adrenal hemorrhage. They distinguished between two fulminating syndromes with adrenal hemorrhage. In one consciousness persists to the end and the spinal fluid is clear; in the other there are meningeal signs followed later by general flaccidity, stertorous breathing, cyanosis and turbid spinal fluid. Daniels reported that 50 percent of 126 patients dying of fulminating meningococcemia with adrenal hemorrhage did not have meningitis. His study showed an inverse correlation between the duration of life and the degree of adrenal hemorrhage.

Until 1940 when Carey reported a case of Waterhouse Friderichsen syndrome with recovery, the disease was considered universally fatal. Weinberg and McGavack found that up to 1945 only 12 cases with recovery had been reported. This

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he Surg General D p m f h A m y W h g D C

small number of recoveries is in sharp contrast to the favorable prognosis given to meningococcic infections in general since 1940, with reported recovery rates of 95 to 98.5 percent.¹¹⁻¹⁶ Several investigators¹⁷⁻²⁰ reported finding alterations in blood chemistry characteristic of adrenal insufficiency in patients with severe infections, and suggested that the circulatory collapse occurring in severe infections is due to adrenal insufficiency. There are a number of reports of the successful use of adrenal cortical extract and sodium chloride in combating peripheral collapse in infections,¹¹⁻²¹⁻²⁴ and of their unsuccessful use.²⁵⁻²⁶ More recently, nine instances of recovery from the Waterhouse-Friderichsen syndrome with the use of cortisone were reported.²⁷⁻³⁴

This case of fulminating meningococcemia and meningitis (Waterhouse-Friderichsen syndrome of the enccephalomyelitis type) is reported because of (1) the dramatic recovery of the patient from a profound state of shock of about 3½ hours' duration when treated with massive doses of aqueous adrenal cortical extract in addition to desoxycorticosterone acetate, antibiotics, fluids, and electrolytes; (2) the development of neuroarthritides of a single joint during the active stage of the disease, and (3) the development of hypopotassemia early in the course of the disease.

CASE REPORT

A 23-year-old soldier was admitted to the emergency room of this hospital on 4 February 1951 in a profound state of shock. He could be roused only with great difficulty. There was a 2-day history of headache and weakness of the right arm. Nausea, frequent vomiting, and pain in both lower extremities appeared on the day of admission. He was brought to the hospital after he had collapsed in his quarters.

Physical examination on admission revealed an acutely ill, prostrate, semistuporous white man in profound shock. The rectal temperature was 101.4° F. The radial pulses were imperceptible and blood pressure was unobtainable in either arm. The respirations were 24 per minute and shallow. The patient's skin was ashen gray, and his lips, fingers, and toes were cyanotic. His extremities were cold and he was perspiring profusely. A maculopapular rash was present on the dorsum of each wrist. A few scattered lesions were visible over the chest, abdomen, upper thighs, and on the hard palate. Small subconjunctival hemorrhages were present bilaterally. The skin lesions were rounded, well-defined maculopapules with dark centers surrounded by a pink zone and measured 3 to 5 mm in diameter. The pupils were contracted and did not react to light. Funduscopic examination revealed slight blurring of the disk margins bilaterally. The lungs were normal to percussion and auscultation. Heart tones were of poor quality and distant. The heart rate was 104 to 120 per minute with a regular

rhythm. No cardiac murmur were present. The abdomen was flat and soft, no masses were palpable. Bowel peristalsis was normal. The deep tendon reflexes were hypoactive throughout but definitely more decreased on the right. The plantar response was flexor and the Kernig and Brudzinski signs were markedly positive. There was definite weakness of both upper and lower extremities. Findings of the remainder of the neurologic examination, including examination of the cranial nerves, were normal. Examination of the blood revealed an erythrocyte count of 4.7 million per cu mm, hemoglobin 13 grams per 100 ml, hematocrit 41 percent, and sedimentation rate 20 mm per hour (Wintrube). The leukocyte count was 21,400 per cu mm, with 88 percent neutrophils, 8 percent lymphocytes, and 4 percent monocytes. The cardiolipin test for syphilis was negative. Urinalysis revealed a specific gravity of 1.019 and there was 2 plus reaction for albumin. Microscopic examination of the urine was negative. Lumbar puncture revealed a faintly turbid fluid containing 370 leukocytes per cu mm, with 80 percent neutrophils and 20 percent lymphocytes. Spinal fluid sugar was 92 mg per 100 ml, and protein was 198 mg per 100 ml. Gram-negative diplococci were identified on direct smear of the spinal fluid. Blood and spinal fluid culture performed on admission and reported 48 hours later revealed a gram-negative diplococcus identified morphologically, biochemically, and serologically as *N meningitidis*.

One unit of plasma and 1 liter of a one-sixth molar sodium lactate with 5 grams of sodium sulfadiazine added was given intravenously in the emergency room. On admission to the ward 40 ml of adrenal cortical extract was injected intravenously and the patient was placed in an oxygen tent. No blood pressure was obtainable in either arm for 3 hours and 15 minutes after admission. During this period the patient received 120 ml of adrenal cortical extract intravenously, 20 mg of desoxytocosterone acetate and 1 ml of adrenalin (brand of epinephrine) in oil intramuscularly. During the first 9 hours after admission he received a total of 160 ml of adrenal cortical extract intravenously, 40 mg of desoxytocosterone acetate and 1 ml of adrenalin intramuscularly. Crystalline penicillin G 240 mg (400,000 units) intramuscularly was given every 3 hours. The first blood pressure reading was 98/60 mm Hg and the pulse rate at this time was 104 per minute. Five hours after admission the blood pressure was 110/80 mm Hg, the radial pulse was 110 per minute and of good volume. The color improved but the patient continued to perspire profusely. He remained extremely restless and confused, requiring restraint for many hours. There were frequent watery stools and urinary incontinence during the first 20 hours of hospitalization. Thereafter the patient was oriented but became very drowsy. He continued to retch and vomit frequently through the third hospital day. When the intravenous dosage of adrenal cortical extract was reduced to 5 ml every 4 hours the systolic blood pressure was not due to fall. The dosage was then increased to 5 ml every 2 hours. Thereafter the systolic pressure rose slowly and remained steady between 104 and 108 mm Hg.

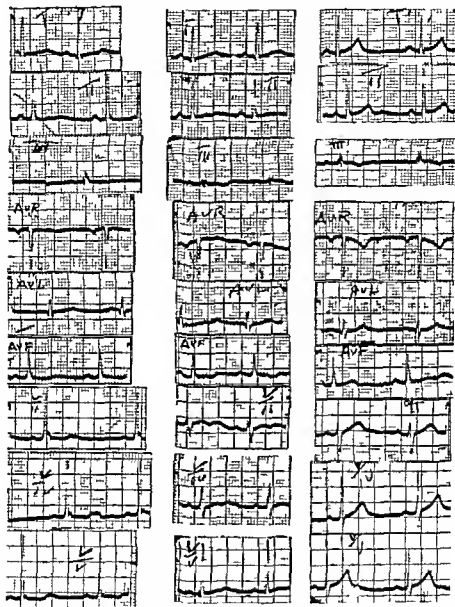
On the third hospital day the erythrocyte count was 3 94 million per cu mm hemoglobin 12 5 grams per 100 ml hematocrit 38 percent and sedimentation rate 40 mm per hour (Wintrobe) Urinalysis showed a specific gravity of 1 024 with 3 plus reaction for albumin and 1 plus reaction for sugar Microscopic examination of the urine showed no sulfonamide crystals present Serum chloride was 493 mg per 100 ml CO_2 combining power 74 volumes percent blood urea nitrogen 13 1 mg per 100 ml and blood sulfonamide level 12 0 mg per 100 ml A roentgenogram of the abdomen was made to rule out possible intestinal obstruction suspected because of persistent vomiting and abdominal cramps with moderate abdominal rigidity and distention No abnormal calcifications or gas accumulations were observed The electrocardiogram at this time revealed prolongation of the Q-T interval and S T segment and T wave changes compatible with hypopotassemia (fig 1A) Nasal gavage was begun with 60 ml of orange juice and milk every 2 hours One gram of potassium acetate was mixed with the feedings 4 times a day The urinary output during the 24 hour period of the third hospital day was only 720 ml despite 3 liters of fluid administered intravenously The vomitus totaled 1 200 ml After the introduction of potassium acetate orange juice and milk there was remarkable improvement in his clinical condition Vomiting ceased abdominal cramps subsided distention and rigidity decreased markedly and the urinary output increased The nasal tube was removed on the fifth hospital day and a soft diet was started Orange juice and milk were given *ad lib* potassium acetate was continued in 1 gram capsules with food 4 times daily

On the fifth hospital day the pulse rate decreased to 50 per minute while the blood pressure was 128/60 mm Hg With this change adrenal cortical extract was then administered intramuscularly and the dosage of adrenal cortical extract and desoxycorticosterone acetate was gradually reduced until they were discontinued on the seventh and eleventh hospital days respectively

On the seventh hospital day after the patient had received about 15 grams of potassium acetate orally 1 liter of orange juice and milk daily for 4 days and 2 days of a soft diet the serum sodium was 142 mEq/L and the serum potassium was 3 1 mEq/L The serum chloride was 513 mg per 100 ml and the CO_2 combining power was 54 volumes percent At this time the electrocardiogram showed only slight improvement when compared with the previous tracing (fig 1B)

On the eighth day of illness the patient exhibited a red hot swollen painful right elbow without evidence of effusion The temperature rose to 101°F Roentgenographic examination of the elbow joint was normal The elbow was splinted elevated and warm moist heat was applied The temperature remained between 100° and 101°F to the

The serum sodium and potassium determinations were made at The Mason / C / S
of the University of Pennsylvania Hospital Philadelphia Pa in the laboratory of
Dr J R Elk of the small standard sodium ion 3553 mEq/l



Rate = 83/min
 P R Int 18 sec
 Q T Int 58 sec

Rate = 71/min
 P R Int 18 sec
 Q T Int 48 sec

Rate = 71/min
 P R Int = 16 sec
 Q T Int 36 sec

(A) Th d b p t d y

(B) Se ch b sp t d y

(C) Thur enth b p t d y

Figur 1 El t oc d gram (A) O th d b p t d y hou g p r l g t
 f Q T i t val a d S T g m n i a d T a cha g (B) O ve th
 ho p t d y b w g l i g h t m p o u m t (C) Normal f n d g th t th
 b p t d y

fifteenth day of illness. Thereafter the patient was afebrile. At this time because of nausea and heartburn the dosage of potassium acetate was reduced to 3 grams orally every 24 hours. The right elbow showed marked clinical improvement and the petechiae had disappeared. After the thirteenth hospital day the patient had no complaints and felt well.

A lumbar puncture repeated on the fifteenth day of illness revealed 1 leukocyte per cu mm, sugar 41 mg per 100 ml, and total protein 34.2 mg per 100 ml. Blood and spinal fluid cultures were reported to be sterile after 2 weeks' incubation. The first normal electrocardiogram was reported 16 days after the onset of illness and 11 days after starting potassium acetate, orange juice, and milk, followed by a normal diet (fig. 1C). Penicillin and sulfadiazine were discontinued on the twenty-second and twenty-fifth hospital days respectively. The patient was sent on a 12 day convalescent leave on the twenty-ninth day of illness and returned to full duty on the fifty-seventh day of illness.

DISCUSSION

Recovery of patients clinically manifesting the Waterhouse-Friderichsen syndrome who received adrenal hormones in addition to sulfonamide therapy has been reported.^{11, 14, 17-19, 21-23} Not all patients with acute fatal infections, particularly not all adults exhibiting the Waterhouse-Friderichsen syndrome, have been found at autopsy to have had massive adrenal hemorrhage.^{17, 18, 24} Kinsman and others²⁵ were unable to distinguish clinically those patients who exhibited massive adrenal hemorrhage at autopsy from those who exhibited only degenerative changes in the adrenal glands.

Rich¹⁷ reported the association of adrenal cortical damage with acute infections and suggested the possible relationship of circulatory collapse to this adrenal damage. Ebert and Stead¹⁶ found that shock accompanying severe acute infection differs from that following trauma or hemorrhage because in infection the plasma volume is not decreased and transfusions are not beneficial. It is not due to a diminished venous return to the heart from pooling in the smaller vessels, because filling of the venous system does not improve the circulation. In a patient with Waterhouse-Friderichsen syndrome who recovered, Grubbschmidt and associates¹⁹ convincingly demonstrated that the blood pressure is definitely affected by the administration of adrenal cortical hormones. Others^{21, 22} have recorded this same effect in patients who recovered. In view of the now recognized importance of the adrenal cortex in the maintenance of blood pressure, it seems probable that the cortical lesions described by Rich may at least be a contributing factor in some instances of circulatory collapse during acute infections.

DAY OF HOSPITAL	1																
	2	3	4	5	6	7	8	9	10	11	12	13	22 25				
DAY OF ILLNESS	3																
	4	5	6	7	8	9	10	11	12	13	14	15	24 27				
HOURS	500	1600	700	1800	1900	2000	2100	2200	2300	2 00							
DAILY MEAN																	
8 P																	
AD ADREN GORT EXT CC	0	0	70	0	0	0	0	0	10	50	0	0	30	20	15	10	5
DOCA MGM I M	+	0	10				20			20	5	10	0	5			
SULFADIAZINE GM / DAY	5		25					25			0	5			90	5	OR L D ILY
AD PENICILLIN UNITS X 10	4		4							32				24			
5 / GLUCOSE X N SALINE LITERS I V	5		15							2	3	3					
K ACETATE (ORAL) GM / DAY										204					3	3	3
TOTAL FLO INTAKE LITERS / 24 HRS			3							5	5	3			1	3	2
URINARY OUTPUT LITERS / 24 HRS										14	072	363				22	35
VOMITUS LITERS / 24 HRS										630	12						
BLOOD SULFA MGM /										79	12	54	79	91	1	13	133

+ 1 UNIT PLASMA
A G C ADRENALIN IN OIL
/ 6 M SOD LACTATE SOL

Fig 2 R cord / ther py p i t u th W t bo Fr de ch ynd m

Our patient recovered within 3 hours and 15 minutes from a severe state of shock, after receiving adrenal cortical extract intravenously, desoxycorticosterone acetate, adrenalin in oil intramuscularly, plasma, fluids, and sulfadiazine intravenously. A minor toxic effect from the administered adrenal hormones was observed on the fifth hospital day after he had received 300 ml of adrenal cortical extract and 85 mg of desoxycorticosterone acetate. At this time, the blood pressure suddenly rose from an average of 110/75 to 128/58 mm Hg and the pulse rate dropped from 75 to 50 per minute (fig 2). Adrenal cortical extract was subsequently given intramuscularly instead of intravenously, and the dosage of adrenal cortical extract and desoxycorticosterone acetate was gradually decreased. Only 3,500 ml of fluid intravenously was given during the first 9 hours after admission. Thereafter, no more than 3 liters of fluids were administered intravenously in a 24 hour period.

The patient developed clinical evidence of hypopotassemia by the third hospital day, evidenced by marked weakness, lassitude, drowsiness, and abdominal cramps with distention at a time when his general condition was improved. Electrocardiographic evidence confirmed this clinical impression.

The above symptoms definitely lessened with the administration of potassium acetate and foods high in potassium content (orange juice and milk). The development of hypopotassemia, as noted by others,^{1, 2} was attributed to excessive vomiting, diarrhea and dehydration as well as to the administration of intravenous fluids and large doses of adrenal cortical hormones.

On the seventh hospital day, serum sodium was within normal limits (142 mEq/L) but the serum potassium was only 3.1 mEq/L despite the administration of 4 grams of potassium acetate daily for 4 days, in addition to liberal amounts of orange juice and milk orally. It should also be noted that the electrocardiogram returned to normal 11 days after treatment with potassium acetate, orange juice and milk was started.

Acute arthritis of the right elbow occurred in our patient on the ninth day of his illness. Fox and Gilbert³ found the incidence of articular complications to have been 1.9 percent before the use of sulfonamides and 11.8 percent after the advent of chemotherapy—a discrepancy which may well be accounted for by the lessened mortality with more opportunity for complications. Conservative medical treatment, including splinting, moist heat, elevation of the part, sulfadiazine, and penicillin, were employed. Conservative treatment of articular complications in meningococcal infections has been previously recommended.⁴

The patient did not manifest significant depression of renal function at any time. Transitory albuminuria disappeared by the

fourth hospital day. The CO combining power determinations were altered on the third and fourth hospital days only being 74 and 69 volumes percent (normal 50-65 volumes percent) respectively. Serum chloride was within normal limits throughout his illness. The blood urea nitrogen on the third and twenty second hospital days was normal.

SUMMARY

Recovery of a 23 year old man with fulminating meningococemia and meningococcal meningitis (Waterhouse-Friderichsen syndrome of the encephalomyelitic type) is reported.

Recovery from severe shock and circulatory collapse resulted after a period of 3 hours and 15 minutes. Massive initial doses of adrenal cortical extract intravenously and desoxycorticos terone acetate intramuscularly in addition to sulfadiazine intravenously and crystalline penicillin intramuscularly were employed. Excessive intravenous fluid and colloid therapy was avoided.

Clinical evidence of hypopotassemia was supported by electrocardiographic changes and by a low level of serum potassium during the recovery phase. There was good response to the oral administration of potassium acetate, orange juice and food. Acute arthritis of the right elbow developed on the eighth day of illness; conservative treatment was followed by complete recovery. No significant blood chemical changes or renal depression was noted during the course of the illness.

A more favorable prognosis may now be given to this previously fatal syndrome with the early administration of adrenal cortical hormones including cortisone in addition to sulfadiazine and penicillin.

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THE PRACTICAL PRACTITIONER

Time nd again the critic sm is levelled at medical schools that they ar not turning out practical men By practical I fear is often meant the sort of man who can empty a waiting-room containing 60 patients n o hour nd who moves with facility amongst the maze of forms and certificates wh ch bulk largely in general practice If such is a legitimate aim of undergraduate instruction then I am happy to believe schools are failing in the task These things are certainly important but there is something that transcends them which if the practitioner lacks renders his practical skills more of a liability than an asset and that is the capacity to think straight to know how to diagnose not in the sense of having memorized tables of differential diagnosis but of being able patiently to collect evidence to know what constitutes good evidence and what constitutes bad and to recognize an unusual situation when it arises and from what source to get enlightenment In brief I must confess to a horror of sound practical men as so often I have found them dogmatic empiricists confident in their own ignorance—veritable slaves of belief as proof against new knowledge s a member of the Inquisition against heresy

—W MELVILLE ARNOTT

P d g f th F t W Id
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 Oxf d U ty P 1954 p 280-281

Agranulocytosis Complicating PAS and Streptomycin Therapy

RICHARD A MAHRER *Lieutenant MC USA*

RAYMOND MARET *Colonel MC USA*

MANY DRUGS have been indicted as causes of agranulocytosis, and the list grows almost daily. Most frequent offenders are

Aminopyrine and other coal tar derivatives	Quinine
Organic arsenicals	Bismuth
Cinchophens	DDT
Gold salts	Triphenylamine hydrochloride
Sulfonamides	Methaphenylene hydrochloride
Organic antimonials	Chloramphenicol
Acetophenetidin	Phenylbutazone
Dinitrophenol	Hydralazine hydrochloride
Thiouracil derivatives	Procaine derivatives
Anticonvulsant drugs	Mercurial diuretics
Barbiturates	Methimazole

It is believed that para aminosalicylic acid (PAS) must be added to this compendium and the potentially dangerous complication of agranulocytosis in present-day antituberculous therapy must be recognized early and vigorously treated.

Since PAS was introduced in 1946, its use as an antimicrobial agent in the treatment of patients with tuberculosis has become world wide. Various complications or reactions as a result of its use have been reported and excellently summarized by Horst.¹ These include

Urticaria	Löffler's eosinophilic pneumonitis
Fever	
Anorexia	Meningeal irritation with elevated cells in the cerebrospinal fluid
Emesis	

on dmission rose to 63 mm/hr (40 mm/hr corrected) on the third hospital day and remained at that level until the ninth hospital day when it began decreasing. By the twelfth hospital day the sedimentation rate had reached normal levels.

Reticulocyte counts were within normal limits until the twelfth hospital day when the percentage rose to 2.4 percent. The next day it was 2.5 percent and then again returned to the previous low levels. Frequent platelet counts were within normal limit. A tourniquet test was negative.

The patient was asymptomatic on discharge on the twentieth hospital day. On discharge her white blood cell count was 9,100 per cu. mm with 70 percent neutrophils, 29 percent lymphocyte and 1 percent monocytes. One week later as therapy was being stopped the white blood cell count was 6,800 per cu. mm with 60 percent neutrophils, 30 percent lymphocytes, 8 percent monocytes and 2 percent eosinophils.

DISCUSSION

This patient had a severe agranulocytosis with an abrupt onset manifested by fever, malaise and mildly sore throat occurring in the sixth week of PAS and streptomycin therapy. She had previously received intensive treatment with streptomycin and isoniazid prior to surgical intervention without incident. Streptomycin has been reported as a cause of aplastic anemia and cannot be ruled out as the offending agent in this patient. We believe this unlikely, however, because she had received streptomycin previously with no apparent ill effects. In a few cases of acute hematogenous tuberculosis reported by McDermott leukopenia of from 1,500 to 3,000 cells per cu. mm were noted during the course of streptomycin therapy. The agranulocytosis in our patient apparently occurred as a result of an allergic sensitivity of the bone marrow leukocytes to the PAS without other hematologic manifestations.

An aplastic process was considered in the differential diagnosis but was not believed tenable due to the bone marrow study which showed normal erythropoiesis. In addition there was no thrombocytopenia or bleeding diathesis in this patient.

Although several reports show successful desensitization to PAS after reactions to it had occurred, it is believed that in the future other agents should be used in treating this woman because of the severity of her attack.

Since the advent of antibiotics mortality from agranulocytosis has plummeted from an otherwise hopeless outcome in most cases to a better though still serious prognosis. We were fortunate in hospitalizing our patient shortly after the onset of her symptoms. Death usually occurs from overwhelming sepsis during the

suppressive phase of the granulocyte series unless the invading organism can be inhibited by prompt and adequate therapy. Penicillin in large doses was the treatment used although, until the startling response to ACTH appeared, the patient continued to regress. The use of steroids in agranulocytosis is controversial.⁷⁻¹⁰ Some authorities believe that infection is spread by their administration. There is no definite proof that ACTH and cortisone adversely affect the course of pulmonary tuberculosis. These factors were carefully weighed, and in view of the gravity of the situation, it was decided to assume the calculated risk of steroid therapy. The hypersensitivity state and its accompanying bone marrow changes were the immediate concern and thus ACTH intravenously followed by cortisone was administered. The immediate defervescence and the quick response in leukopenia represent much more than just coincidence. Dameshok¹¹ stated that the immediate shock of hypersensitivity to a drug in the bone marrow is a reduction in granulocyte precursors followed by a loss of mature granulocytes thereby leaving the marrow with practically no granulocytes. When marrow in our patient was examined, a later stage was seen which follows the initial insult, i. e. a maturation arrest where precursors were present in the marrow but mature granulocytes were conspicuously absent.

Recovery, if it occurs, is dependent upon the patient being able (1) to cope with the shock of the granulocytopenia by his own cellular reactivity and (2) to combat the bacterial invasion, which occurs inevitably in a body stripped of its granulocyte defenses.¹² The use of steroids in our patient apparently adequately controlled the shock of the granulocytopenia until recovery ensued.

SUMMARY AND CONCLUSIONS

A patient with agranulocytosis, probably due to PAS administration, was treated with antibiotics and steroids and made an uneventful recovery. No other similar reaction to this drug has been found in the available literature. It is not advocated however that steroids alone be used in the face of overwhelming infection. They should be reserved for those patients in whom either the infection is under some control with antibiotics, or the course is unrelentingly downward due to a suspected hypersensitivity phenomenon.

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COOPERATION IN PUBLIC RELATIONS

Our profession is an institut on of character with a good reputatio
and we re att mpting to demonstrate that the professi n operates
primarily in the public interest Th s has b en the basi for our entir
effort We ha e needed and tried to secure the full cooperation of all
phys cians their f milies office employees nd hospital personnel
The acti e cooperation of th entire group is essential f we are to
convince the public th t as a profession we are interested in them and
n their problem that we are aware th t we are dealing w th human
beings who live ffer ha e problems ambitions and a pit tions yet
love nd err ven as you and I As a group w must get away from and
h w the public that we are away from any tendency to treat patients
impersonally The human rel tionship is m t important in all our deal
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and cannot secure or make the most effi ent se of the care and con
d r tion needed to promote g od health a d keep our public relations
on a high plane

—VERNE S CAVINESS M. D

N th Ca l M d al J rn l

p 562 N v 1954

Delayed Vasospasm of the Glans Penis Following Circumcision

Treatment With Sympathetic Block

BERNARD V. WETCHLER *First Lieutenant, MC, USA*

CHARLES A. MOORE *Major MC USA*

CIRCUMCISION of the adult is considered by both the professional and lay public as a minor operation. It is often performed during an office visit.

The operative procedure, however, is attended by its full share of complications both during and after operation. Some of these are postoperative hemorrhage, infection, disruption of the suture line secondary to an erection, and, rarely, excision of too much foreskin. The occasional occurrence of the above, together with proper measures of control and/or treatment, is well established.¹

The purpose of this article is to present a different complication, one which has not heretofore been observed by us nor to the best of our knowledge been reported in the literature.

CASE REPORT

A 21 year-old man on 3 February 1955 underwent a circumcision for the correction of a marked phimosis.

Anesthesia was carried out according to the technic of Light, Weygandt, and Wetchler. A 1-percent solution of procaine hydrochloride with epinephrine added to make a concentration of not greater than 1:200,000 (5 drops of 1:1,000 to 30 ml of procaine) was injected into each of the following four sites at the base of the penis. Three milliliters of solution were injected dorsally on both sides of the midline to anesthetize the dorsal nerves. Two milliliters were then injected ventrally on both sides of the urethra. The patient, by maintaining gentle traction on the foreskin during the paraurethral injections, facilitated the procedure. An attempt was made to keep all injections external to the corpora. This method has been used in over 1,000 circumcisions or operations on the glans penis in the adult patient without the occurrence of any complications attributable to it.

The operative technic was that of the dorsal and ventral slit method. The operative and the immediate postoperative courses were uneventful.

From U. S. Army Hospital, Fort Bragg, N. C. Dr. Wetchler is now at 6310 Detroit Ct., Rego Park, N. Y.

The patient was discharged to a light duty status 48 hours after operation. At this time the operative result appeared excellent. There was only slight edema about the frenulum, the suture line was intact, and no discoloration was present.

On 8 February (5 days after operation) the patient returned to the urologic clinic because he thought that his penis had become infected. Further questioning brought out that on the evening of 7 February while getting ready for bed, he noticed that the glans penis was blue. By morning the glans penis was darker in color and felt cool. The patient had no pain or any urinary difficulties.

There was marked cyanosis of the glans and frenulum. The area directly surrounding the urethral meatus and between the meatus and the frenulum were especially cyanotic. A definite and abrupt temperature difference was present between the shaft and the glans penis, the glans being much cooler. The sharpest line of demarcation occurred in the region of the corona. Mild edema of the frenulum was present. No evidence of thrombosis, trauma, or infection could be found.

The patient was readmitted to the hospital and an immediate evaluation by the anesthesiologist was requested. From both the history and physical examination it was believed that vasospasm was the best for the cyanosis and coolness, the most likely cause being the trauma of operation. The condition was classified as a postoperative reflex sympathetic dystrophy. Sympathetic nerve blocks were definitely indicated and because the symptoms were referable to a midline organ, the epidural route for performing a sympathetic block was chosen for this would achieve the desired bilateral effect.

At 1300 hours 25 ml of a 0.15 percent solution of pontocaine (bupivacaine hydrochloride) were injected between the third and fourth lumbar interspaces with the patient in the sitting up position. There was an immediate temperature increase in the glans penis and within 10 minutes the temperature of the glans approximated that of the shaft. Cyanosis decreased by about 85 percent.

This status was maintained until the morning of 10 February when the cyanosis became more apparent. The epidural injection was repeated and following this all cyanosis disappeared. There was no subsequent recurrence of any cyanosis or coolness.

The patient was discharged on 14 February. He returned for a routine clinic check up on 21 February and was found to be completely symptomatic.

SUMMARY

The initiating cause of a case of delayed postoperative (circumcision) vasospasm was assumed to be the operative procedure. A diagnosis was made of a reflex sympathetic dystrophy of the glans penis subsequent to operation. The patient was treated with chem-

ical sympathetic blocks via the epidural route and had a dramatic response to this form of therapy. Early diagnosis and proper treatment may have averted a serious consequence of a minor surgical procedure.

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LITERARY BOOBY TRAPS

Latin Is there any good reason why the modern physician's writing must glitter with Latin phrases? I want measles not "morbilli." I see no reason for *in situ*, *locus minoris resistentiae* and *modus operandi*. And when a doctor writes *pes planus* for flat feet I simply refuse to trust him. He is clearly a mannered pedant. Similarly there is no justification for such terms as "pyrexia" for "fever," etiology for cause, etc. Gallstones is English. "cholelithiasis" isn't. And any writer who says *podagra* when he means gout would probably say *agrypnia* instead of insomnia.

Unconventional abbreviations To you "P. A." may mean pernicious anemia. To the radiologist it means postero anterior. And as far as I'm concerned it's *paralysis agitans*. Which proves there is no booby trap in medical writing quite so dangerous as the loosely used abbreviation. Even the simple letter O can stand for eye, pint, oxygen, an electrode opening, or a blood group without agglutinin.

Split second percentages I begin to suspect the authenticity of a medical paper if its author carries percentage figures beyond one decimal point. Does the fellow really expect me to believe there is a significant difference between a recovery rate of 87.1 percent and a rate of 87.13 percent? In my book such extraordinary precision also makes the man's findings sound ridiculous.

Editorial we Finally may I be permitted a raised eyebrow in the direction of the solo practitioner who grandiloquently announces "We have had good results with _____" when he really means "I have had _____" etc.? Does he expect me to believe he is a one man Mayo Clinic?

—HENRY A. DAVIDSON, M.D.
in *Medical Economics*
p. 192, June 1955

Hernia Due to Nonpenetrating Trauma

ROBERT M. HARDAWAY *Lieutenant Colonel MC USA*

COLEMAN J. CONNOLLY *Major MC USA*

HERNIAS of the lung or abdominal viscera secondary to penetrating wounds or surgical intervention occur frequently. However, hernias either of the lung or abdominal viscera due to blunt nonpenetrating trauma are rare.

About 200 cases of lung hernia from penetrating or surgical trauma have been reported, but only 3 adequately reported cases of lung hernia secondary to nonpenetrating trauma have been found in the recent American literature.¹ Maurer and Blades, in their excellent article on lung hernia, reported 11 cases, only 1 of which was due to blunt nonpenetrating trauma. Their cases do not include spontaneous lung hernias such as herniation of the lung into the neck through Sibson's fascia or congenital intercostal hernias.²

Recently two cases observed at this hospital demonstrated hernia from nonpenetrating trauma to the musculature attaching to the ribs. One lesion was thoracic, the other was subcostal and abdominal.

CASE REPORTS

Case 1. A 47-year-old man was driving a piece of heavy road equipment at the Engineer Proving Grounds, Fort Belvoir, Va., on 17 August 1954. He sustained crushing injury to the right side of his chest when the machine upset in a ditch. On admission to this hospital he had a pronounced bulge between his ninth and tenth ribs on the right side where he strained. Subcutaneous emphysema was palpable and a defect through which the lung was palpated as the patient strained could be felt in the muscular thoracic wall. No clinical or roentgenologic evidence of fractured ribs or pneumothorax was present. A diagnosis of lung hernia was evident.

The patient's ribs were tapped but without success. On 21 August surgical repair was undertaken. A 4-inch incision over the ninth interspace revealed a 1-inch tear splitting the fibers of the otherwise intact latissimus dorsi muscle. The muscle was cut to expose the intercostal space below. The intercostal muscles were entirely torn, completely separating the ribs for a distance of 4 inches (fig. 1). This repair involved the parietal pleura so that the lung was immediately in contact with

F m U S Army Hospital F B L at V C L Hardway was gaged b
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the latissimus dorsi muscle. The chest cavity was explored through this opening and the lung and the diaphragm were found to be intact. A large right angle chest drain was inserted through the ninth intercostal space anteriorly and brought out through a separate stab wound. Two peticoastal sutures of double No. 2 catgut were inserted. The inter-



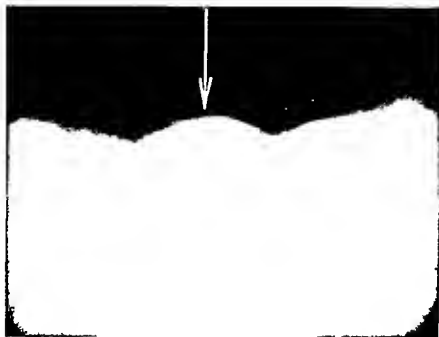
Figure 1 (case 1) The latissimus dorsi muscle has been cut revealing the defect between the ribs with lung showing through. Note the position of the demided of muscle. The portion equates a flap from the periosteum.

costal bundles were sutured with interrupted No. 0 cotton except for a 1 inch area where there was no intercostal bundle remaining on the lower side. At this point an incision was made in the periosteum on the lower side of the rib and the periosteum turned upward and sutured to the upper part of the intercostal bundle. All sutures were then tied using a rib approximator. The latissimus dorsi muscle was sutured with interrupted No. 0 cotton. Subcutaneous tissue was closed with interrupted No. 0000 cotton as was the skin. The chest drain was attached to a water sealed bottle.

The patient's postoperative course was uneventful. The drainage tube was removed on the second postoperative day and the patient was discharged on the tenth postoperative day with his wound well healed.

Case 2. A 36 year old woman was in an automobile collision on 10 November 1953 in which she received blunt nonpenetrating trauma to her left flank. An emergency splenectomy was performed at another

hospital and on her tenth postoperative day she was transferred to this hospital. She had marked tenderness of the left flank associated with hematuria. Intravenous pyelogram showed extravasation of the dye from the left kidney into the perinephric tissues. Conservative therapy was decided on in view of the satisfactory 10-day course and



Figur 2 (as 2) Photograph showing the bulge appearing below the twelfth rib on the left side.

the lack of left flank swelling. Roentgenographic examination showed multiple fractures of the left thoracic cage but no pneumothorax. Except for a pleural effusion on her left thorax which was tapped twice with evacuation of several hundred milliliters of serosanguineous fluid, her convalescence was uneventful. She was discharged on 19 December with a residual complaint of soreness and weather-aching in the left side of her chest.

In April 1954 the patient noticed that when she strained a bulge appeared in the midline area in the subcostal area in the left flank. Examination showed a soft protrusion which appeared below the left twelfth rib on straining (fig 2). A defect in the abdominal musculature was palpable in the subcostal area just anterior to the tip of the left twelfth rib. Roentgenographic examination showed the colon herniating through the abdominal musculature into the subcutaneous space. When the patient coughed the diaphragm could be palpated by fingers inserted into the defect. A rupture of the diaphragm with protrusion of the lung into the hernia could not be ruled out. During the months that

followed the patient complained that the hernia was enlarging. She said that the bulging reduced her muscular strength and interfered with her coughing. On 4 October the defect was surgically repaired. A defect about 3 inches in diameter was found in all muscular layers of the abdominal wall where the oblique muscles had been pulled from their twelfth rib attachments. On forcibly inflating the lungs the diaphragm did not appear to be damaged. The perirenal fascia and the kidney were intact. The muscle layers were freed up and sutured in one layer with interrupted No. 1 cotton. The epimysium over the external oblique muscle was sutured with interrupted No. 0 cotton and the skin and subcutaneous tissue with interrupted No. 0000 cotton. The patient's postoperative course was uneventful and she was discharged on the fourth postoperative day.

DISCUSSION

Pneumonocele, or hernia of the lung, is a condition in which the lung bulges subcutaneously out of the pleural cavity.¹⁻⁷ This lesion may be congenital or acquired, traumatic or spontaneous. Congenital ones are said to be most common in the neck through a defect in Sibson's fascia. Lungs of patients with asthma, however, also may bulge through a ruptured Sibson's fascia. Penetrating trauma is the commonest cause of lung hernia. Lung which protrudes through the skin from a traumatic lesion of the wall of the thorax, however, is not a hernia. The lung may protrude through the diaphragm, or protrude from one pleural cavity into the other. The pneumonocele rarely has a sac, which may be pleura.

A pneumonocele may produce distressing symptoms. The coughing mechanism may be interfered with, and patients may develop focal areas of atelectasis. Muscular strength may be diminished as the patient strains in lifting, the bulging may prevent the patient from fixing the glottis. If the hernia causes local pain on coughing, the patient may suppress the cough and develop atelectasis.

The mechanism of direct trauma is obvious. Blunt, nonpenetrating trauma tears the friable muscles, leaving the tough, thick skin abraded, perhaps but intact. In our first patient, although the bony thoracic cage was undamaged the pleura was torn, in the second the peritoneum and diaphragm were intact and multiple fractures of the ribs of the left thoracic cage were present. At the time of operation in both patients, the severed muscle edges were smooth and shiny; no free muscle fasciculi were seen on the edges.

Repair is by simple suture of the muscle layers or if the muscle has been separated at its costal attachment as in the first patient, a flap of periosteum may be raised, turned back, and sutured.

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FAMILY CARE OF THE ARTERIOSCLEROTIC PATIENT

Many important advances have been made in our understanding of the arteriosclerotic process it remains nevertheless that the present method of preventing or curing the process. I personally believe that the care of this group of patient 30 or 40 years ago was perhaps superior to that of today. In those days their medical needs were cared for by the old time general practitioner who usually had cared for them throughout part of their lives. The patient always lived until death with his or her children or grandchildren or both usually in his own old home. In those days the family were large and closely knit with more relatives living within a short distance. The houses were large and spacious and the family and social structure centered around these large homes. If necessary another room and more rocking chairs were added to the house accompanied by the inevitable open fireplace, clay pipes for the women and Picnic Twist chewing tobacco for the old men. These aged people were desired and loved members of the family group and had the feeling of being wanted. Often they engaged in petty activities within their physical limit which were productive such as knitting mending and other skilled hand work. Many of their symptoms and eccentricities were described as queer or peculiar rather than psychic.

—A A MILBURN M D

W i V g M d i c l J u r n a l

p 75 Ma 1955

Ewing's Tumor of the Zygomatic Arch

JAMES E CHIPPS *Lieutenant Colonel DC USA*

FRANCIS J PEISEL *Major MC USA*

NORMAN R SHIPPEY *Major MC USA*

NONTRAUMATIC lesions of the zygomatic arch are rarely observed. Ewing's tumor is frequently reported as primary in the jaws, and occasionally reported as primary in other bones of the skull, we are not aware, however, of any report of this tumor as primary in the zygomatic arch. Therefore, the following case is of interest and is reported even though the patient has been observed for only 5 months.

CASE REPORT

A 9-year old boy came to the clinic because of a painless swelling overlying the left zygomatic arch. It had first been noticed by his parents a few days earlier.

Two months before examination the boy had fallen at play sustaining a blow to the same area with subsequent pain, swelling and slight discoloration which had largely subsided prior to the development of the present swelling. Otherwise the past history and family history were noncontributory.

Examination revealed a smooth 4 by 5 cm swelling overlying the posterior two thirds of the left zygomatic arch (fig. 1). The swelling was fixed palpably firm and slightly tender. Mandibular excursions were slightly limited vertically and to the right but the patient had no complaints relative to mandibular function.

Radiographs showed a destructive lesion of the left zygomatic arch with loss of bone detail (fig. 2). A skeletal survey did not reveal any other osseous lesions.

A biopsy of the lesion showed sheaths of uniform round cells with relatively large oval nuclei (fig. 3). Granular material was noted in some of the nuclei. The cytoplasm was slightly basophilic. The limiting membranes were clearly defined with minimal intercellular fibrous tissue. The tumor cells were arranged in sheaths which were perithelial in some areas and encroached on bone spicules in other areas. A diagnosis of Ewing's tumor was made. A differentiation from reticulum cell sarcoma and neuroblastoma was based on the uniformity of the cell

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Fig. 1. Tumor of the left leg.

pattern combined with the growth pattern of the heaths and the absence of intercellular reticulum and in the failure of clinical and radiographic examination to disclose any other pathologic lesion. This diagnosis was later confirmed by the Armed Forces Institute of Pathology.

Radiation therapy was begun 3 days after the biopsy. Over a 15-day period 3,000 roentgen units in air were given to a 7 by 10-cm. field directly overlying the mass using 200 kilovolts at a distance of 50 cm through 0.5 mm copper and 1.0 mm aluminum filters.

There was a moderate erythematous response to the therapy but regression of the size of the tumor began almost immediately. After 1 month there was clinical evidence of disease (fig. 4).

Five months after the initial examination there was no clinical evidence of recurrence at the primary site and no local nor radiographic evidence of new lesions elsewhere. A radiograph of the zygomatic arch showed an increasing erosion of bone the contour of a normal arch.



Figure 2. Radiograph shows a destructive lesion of the left zygomatic arch.

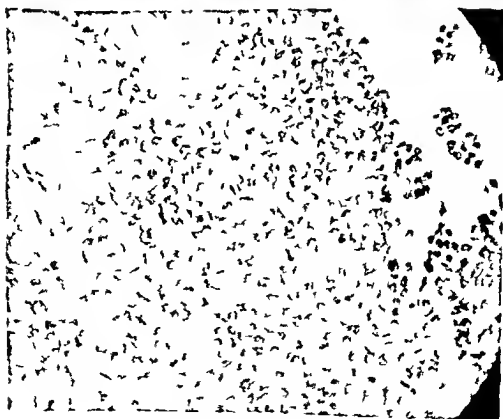


Figure 3. Microscopic section showing the tumor cells ($\times 100$).



Figure 4 Reg e f t m f t b e l f t z y g m t i c a b o n
m t h f t b e g m g d t i o t h e p y

DISCUSSION

The literature is unanimously gloomy over the results of therapy in Ewing's tumor. Lichtenstein stated that he had personal knowledge of only a single cure. Geschickter and Copeland were among the more optimistic authors reporting 13 patients well after 5 years in a series of 127. However, even these authors reported no survivors with lesions in the skull or jaws. Their series included 12 patients with lesions of the jaws, 2 of the mastoid and 1 of the frontal bone.

Our search of the literature at hand disclosed 37 instances of Ewing's tumor primary in the skull or jaws with but 1 apparent survivor. Thoma cited a case from the Registry of Bone Sarcoma, American College of Surgeons, an instance of a 9 year old girl who was well 9 years following treatment of a jaw tumor by excision and radiation with radium.

Geschickter and Copeland showed that radical operation might offer a better prognosis than radiation therapy alone but, in view of the crippling nature of any such procedure in our patient, radiation seemed to be the treatment of choice

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THE MODERN EXECUTIVE

It cannot be said that the executive in modern industry is free of the frustrations that contribute to emotional instability in the labor force. He is subject not only to the strains of his demanding job but also to the hazards of modern competitive society and to the hazards which he brings into his office with him. These latter are probably the most serious of all. They have to do with personality maladjustments, mood disorders, and unconscious motivations patterned in childhood. Like the worker everywhere, the executive brings to the job all his hopes, his fears, his worries, his disappointments, his family troubles—all operating against the background of a changing social panorama. When the executive is emotionally disturbed, there is always a major problem in the organization. This is true not only of the top men but of people along the entire supervisory echelon who are in charge of other people. It is axiomatic that one badly maladjusted supervisor can cause more trouble in a plant than an epidemic of measles. Strangely enough, this individual rarely recognizes his problem himself and is very much surprised when told about it. Preventive psychiatry in industry must start at the top if it is to be effective.

—FRANCIS J. BRACELAND, M.D.

n Med cal Annals of the District of Columbia
p. 220 May 1955

Split Skin Grafts in Postoperative Denudation of Anal Skin and Mucosa

WALTER J. MEEKINGS, JR., L. T. 1 (MC) USNR

THE LOSS of anal skin and mucosa following surgical procedures about the anus is a rarity now because the Whitehead type of hemorrhoidectomy is no longer generally employed. However, the following two case reports are offered because of a very favorable response to a relatively simple type of surgical procedure.

CASE REPORTS

Case 1. A 19-year-old male was admitted to this hospital on 10 March 1955 for further treatment following a hemorrhoidectomy at an advance base. The only record available is a narrative summary of his hospital course.

On 21 February the patient reported to sick call because of swelling in his anal region. Tetracaine ointment, warm application, and mineral oil were prescribed. On 23 February he again reported to sick call and was referred to an activity with more adequate facilities for treating him.

The history at the time of admission revealed painful prolapsed hemorrhoids of six days duration which had subsided partially on conservative therapy. Positive physical findings were limited to the anal region where, on the left side, there was a painful prolapsed anal papilla with internal and external hemorrhoidal tissue present.

On 26 February hemorrhoidectomy was performed. The next written observation was on 6 March when an observer wrote that the patient appeared to have had a complete circumferential hemorrhoidal excision. The patient was then transferred to this hospital because of the length of time involved in healing and to receive the care necessary to prevent stricture formation.

Examination at this hospital revealed the following: a recent operative procedure on the anus with circumferential loss of perianal skin about 2½ cm distal to the dentate line with the greatest proximal mucosal defect 1½ cm. Digital examination was possible with the index finger; however, there was no induration of the perianal tissues. Sphincter action was present but the patient had noticed signs of anal incontinence although he was unaware of the leakage of stool.

It was decided to apply split skin grafts to the anal canal area following dilation under anesthesia. On 12 March he was given 1½ oz. of castor oil and a liquid diet was prescribed. On 14 March under spinal anesthesia dilation was performed resulting in acute fissures at 12 and 6 o'clock. Free hand split skin grafts measuring 1 by 2 cm. were taken from the left buttock and placed in the fissures formed by the dilation. These grafts were sutured in place anteriorly and posteriorly with No. 0000 silk. Snug vaseline gauze and pressure dressings were applied.

The patient was kept at rest in bed and on a liquid diet postoperatively. On 16 March it was necessary to remove the dressings because of the appearance of liquid stool. The grafted areas showed about 70 percent take at 6 o'clock and about 35 percent take at 12 o'clock."

He has been maintained on a regular diet and has been receiving daily instrumental dilation. At the time of discharge to duty on 18 April his anal sphincter tone was excellent. He was asymptomatic and was having normal bowel movements. His anal incontinence was still present to a mild degree. This incontinence is expected to clear spontaneously. The grafts had spread out and the skin and mucosa were completely covered.

Case 2. A 25-year-old marine was admitted to this hospital on 6 March 1955 for further treatment following a Whitehead type procedure for anal verruca acuminata performed at an advance base.

On 8 February he was admitted to the advance base hospital with large friable verruca acuminata protruding from the anus. These were bleeding, tender and covered the entire anal and perianal area. Treatment with 20 percent suspension of podophyllum resin was attempted but was not successful in effecting complete regression of the lesions.

On 21 February under spinal anesthesia the mucosa and verrucae were excised. The remaining mucosa was mobilized and brought out over the anal sphincter and sutured to the perianal skin. On the third postoperative day the mucosa retracted and the patient was transferred for further treatment.

Examination at this hospital revealed a circumferential loss of anal skin and mucosa for about 2½ centimeters. The anal area was very dirty and repeated sitz baths were prescribed. There was beginning cicatrix formation and anal dilation with the index finger was all the patient could tolerate. Sphincter tone was present but he had an anal incontinence.

It was decided to attempt split skin grafts to the anal canal. On 12 March he was given 1½ oz. of castor oil and a liquid diet was prescribed. On 14 March under spinal anesthesia and with the patient in a jackknife position the anal canal was dilated resulting in wide fis-

sure t 6 and 12 o clock Free hand split-skin grafts from th left buttock were applied to the fissures These grafts were n t sutur d but were p cked in place with vaseline gauze and pressure dressings

The p tient was maintained on a liquid diet and rest in bed during the postoperative period On 16 March it was necessary to examine the operative site because he had a large watery stool There was a small am unt of "take" at 12 o clock.

On 17 March under local anesthesia of 1 percent procaine a rectal tube was inserted and three quadrant split skin grafts were applied. Vaseline gauz was packed snugly around th tube and against the grafts

On 20 March dressing were removed and cattered takes were noted a ound th anal canal The p tent was started on a regular diet and d ily dilations The gt fied areas spread out in all direct o s At the time of di charge to duty the patient s le on was h ailed Sphincter tone was excellent The were no gns of t ture The patient was h ving r gular bow l movements and w s asymptomatic except for a slight nal inconti ence which he expected to overcome spontaneously

LENGTH OF HISTORY IN CARCINOMA OF THE STOMACH

The concept that ea ly d agnosis of carc n m of the stomach may mpr v nd results is not only falla ious but is in fact the rever e of the truth Patients with progressi ely longer periods of delay from onset of ympt m to the t m of expl tio njoy inc asi gly b tt ch nces of esection and long term survi al In a review of 375 cases of gastr c carcinoma Swynn ron a d Truelove oted th t an our tand ing findi g of the present study is the marked prognostic significance of length of histo y among p rients treated with surgical resection The greater the length of hi tory the better the prognosis Repeated obser v tions of thi eeming pa d x d ct tment n t the need for id nti fying f t rs rh than early diagn i as the avenues through which survival ates i gastr c carcinoma might be improved if this is p sible w th prese t techn c

—IAN MAC DONALD M D d PAUL KOTIN M D

S g ry Gy l gy d Ob t t

p 148 F b 1954



Clinicopathologic Conference

U S Naval Hospital Great Lakes Ill

POSTPARTUM SHOCK

Summary of Clinical History A 35 year old white woman, gravid I para 0, whose estimated date of confinement was 7 November 1952, was seen in the outpatient clinic of this hospital for the first time on 20 October 1952. At that time she was found to have a blood pressure of 145/102 mm Hg, but had no edema or albuminuria. A note from her attending physician stated that on 8 August 1952 her blood pressure was 130/80, and on 7 September and 1 October it was 136/80 mm Hg. Her total weight gain was 30 pounds. She was placed on bed rest, sedation, and a 1000 calorie low salt diet. A urinalysis was negative for albuminuria, and showed a specific gravity of 1.011. Result of microscopic examination was within normal limits. Her red blood cell count was 4.4 million per cu mm and the hemoglobin was 13 grams per 100 ml. She was found to be Rh positive. On this management she began to lose weight, but failed to have a decrease of blood pressure. She felt much better, so was discharged home on sedation 23 October to be followed closely in the pathologic obstetric clinic.

Examination in the clinic on 3 November 1952 revealed a vertex presentation at term, with the presenting part not engaged. Although up to this time it was believed that her pelvis gave clinical evidence of being adequate, roentgenographic pelvimetry was deemed advisable and this was requested. Her blood pressure on this visit was 148/98 mm Hg and she had no albuminuria or edema. On subsequent visits on 10 and 17 November, she was found to have blood pressures of about 140/90 mm Hg. She had no edema and the urine was free of albumin. Findings of roentgenographic pelvimetry were reported as adequate.

Physical Examination On 24 November, the blood pressure was 150/100 mm Hg, mild ankle edema was present. Because of this rising pressure she was readmitted to this hospital for further

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F m h Obs tri Gy

rest and workup. On admission the patient was found to have a term intrauterine pregnancy with vertex floating. The head would dip into the pelvis only with difficulty. The fetal heart tones were audible in the left lower quadrant of the abdomen and no audible placental soufflo was heard. It appeared that the infant was quite large yet by vaginal examination the examining physician believed that vaginal delivery was feasible.

Laboratory Findings. Blood chemistry studies were done with these results: Nonprotein nitrogen 25 mg, blood urea nitrogen 13 mg, uric acid 1.8 mg and creatinine 1.1 mg all per 100 ml; total protein 5.70 (albumin 3.30, globulin 2.40) grams per 100 ml. Other laboratory studies were reported as follows: Red blood cell count 4 million per cu mm, hemoglobin 12.0 grams per 100 ml, and hematocrit 37 percent. The Kahn serologic test for syphilis was negative. Urinalysis was negative for albumin and sugar and showed a specific gravity of 1.011. Microscopic examination revealed 1 to 2 white blood cells per high power field with no casts.

Course in Hospital. Immediately on admission 500 ml of a 20 percent solution of dextrose containing 2 grams of magnesium sulfate was given intravenously. Daily management consisted of 100 mg ($1\frac{1}{2}$ grains) of phenobarbital intramuscularly three times a day, 1 gram of magnesium sulfate intramuscularly four times a day and a 1,000 calorie low salt high protein diet. An eye consultation revealed normal optical fundi.

The day following admission her blood pressure rose to 170/120 mm Hg at which time the intravenous administration of dextrose containing magnesium sulfate was repeated and 120 mg (2 grains) of phenobarbital sodium were given in addition to phenobarbital. On the following two days (26 and 27 November) her blood pressure began to decrease falling to 144/90 mm Hg. At that time a vaginal examination revealed the cervix partially (25 percent) effaced and 1 cm dilated. Because the head could be made to dip into the pelvis by the Hillis maneuver it was believed that induction of labor was advisable.

The patient was first given 1,000 ml of a 5 percent aqueous solution of dextrose intravenously containing 10 minims of pitocin (brand of posterior pituitary). This was begun very slowly (12 to 20 drops per minute) and was effective for the production of contractions every 5 to 7 minutes which lasted 30 seconds. After an hour the speed of the intravenous drip was increased by changing the rate to 30 drops per minute. This narrowed the interval of contractions and increased their effectiveness. Over a period of three hours the rate was gradually increased under close observation to 60 drops per minute which produced contractions every 2 to $2\frac{1}{2}$ minutes. Her blood pressure remained

fairly stable at 140/90 mm Hg. By late afternoon, the entire 1,000 ml of fluid was absorbed and the needle removed. The contractions slowed down and finally ceased. It was decided to allow her to rest for the evening, and begin the process of induction by this means again in the morning.

That evening, at 2000 hours (28 November) the membranes ruptured spontaneously and she began to note a few irregular contractions. The fetal heart tones were good and it was decided to allow her to remain under observation to see if labor would begin. She fell asleep, but at 0430 hours on 29 November was awakened with uterine contractions occurring every 10 minutes. At 0700 hours she was given a soapuds enema and transferred to the labor room. At 1000 hours pitocin was started intravenously at the rate of 10 drops per minute. Immediately very hard and regular contractions began at intervals of 5 minutes, soon decreasing to 3 and, finally, to 2 minutes. They were of good quality. At 1245 hours, after 50 ml of fluid had been given, the intravenous drip was stopped because it was believed that the volume of

the dextrose which was already being given intravenously. This resulted in good contraction of the uterus and control of blood loss.

Immediately postpartum the pulse rose to 120 per minute with blood pressure 190/80 mm Hg. The patient appeared pale. Blood was made available for transfusion. At that time the hemoglobin was 9.5 grams per 100 ml. The pulse continued to be rapid. Two hours after delivery the blood pressure dropped to 80/60 mm Hg and 500 ml of whole blood was started slowly. The pulse had increased to 140 to 160 per minute. The medical watch was called to see her at which time her blood pressure had risen to 139/92 mm Hg with a pulse of 190. The heart was considered to be normal and the lungs were clear. It was believed that her drop in blood pressure had been due to splanchnic vasodilatation. She continued to run a rapid pulse for two more hours but the blood pressure was stabilized between 100/80 and 130/90 mm Hg. She was pallid but seemed to be improving until 1630 hours when she stopped breathing and artificial respiration was undertaken. Stimulation with coramine (brand of nikethamide) was of no avail and the patient was pronounced dead at 1630 hours. Oxygen was in use at the time of death but without effect.

DISCUSSION

D + R bi This so-called elderly primipara presented several problems prior to her actual delivery. On her first admission she had a mild rate rise in blood pressure accompanied by some edema perhaps enough to be considered a very mild pre-eclampsia. On her second admission the blood pressure had risen to 150/100 mm Hg and was accompanied by an increased amount of edema because of this and the fact that she was believed to be past term it was considered advisable to effect delivery. Vaginal delivery was in order and accordingly the membranes were stripped and pitocin administered intravenously. The membranes ruptured spontaneously and when uterine contractions became strong the pitocin was discontinued.

The delivery itself could not be considered truly difficult although a forceps rotation of the head was required to effect delivery after the patient had been in labor for 21 hours. Immediately following delivery the patient's condition seemed satisfactory except for the rapid pulse. The tachycardia persisted the patient appeared to be going into a state of shock and her blood pressure began to drop. Search for evidence of external or internal bleeding was done thoroughly and the attendant felt certain the patient was not losing blood however something was definitely and seriously wrong because her condition soon became worse.

What are the causes we think of when we are faced with such a situation—a patient showing increasing shock soon after delivery? The causes of course can be divided into those which accompany

the puerperal state and those which are extragenital but in which pregnancy plays the role of a possible exciting factor. In the first group are the hemorrhages seen in ruptured tubal pregnancy perforation of the uterus by hydatid mole, placenta praevia, abruptio placentae, rupture of the uterus, rupture of utero-ovarian veins, and postpartum hemorrhage due to atony or inversion of the uterus. Also it is recognized that a state of shock may result in prolonged labor and difficult delivery. There is a third group associated with acute toxemia and cerebral hemorrhage and producing sudden death.

Some extragenital causes are cardiac disease where the strain of labor may rupture the heart, aorta or cerebral veins, and undiagnosed abscesses or tumors which may rupture during delivery. Sudden death during delivery also has been seen in women with severe sickle cell anemia. Clinically our patient did not appear to be stricken by any of these conditions.

In the past 10 years interest has been aroused in "obstetric shock" as apart from the shock of obstetric hemorrhage. In 1941 Steiner and Lushbaugh¹ first reported amniotic fluid embolism. Since then a great deal has appeared in the literature on this subject and quite recently Schneider² distinguished the obstetric shock seen in certain cases of abruptio placentae from that in amniotic fluid embolism. In abruptio placentae we have encountered shock believed caused by the injection into the circulating blood of a certain tissue extract (thromboplastin) which results in widespread intravascular clotting with resultant fibrin emboli from within the circulating blood. In amniotic fluid embolism on the other hand the emboli arise from without the circulating blood (amniotic fluid or meconium) and the resultant vascular occlusions are limited to the pulmonary circulation alone.

Both these disorders may bring about a disastrous chain of events in that grave hemorrhage associated with acute coagulation defect may result. In fibrin embolism with abruptio placentae there may occur a fibrinopenia with defibrination from massive intravascular coagulation. In amniotic fluid or meconium embolism the blood may fail to clot although its fibrinogen is not diminished. Here experimentally at least the defect appears brought on by the release of heparin into the general circulation. It is considered possible for both the conditions to result in acute circulatory failure and there may be acute cor pulmonale.

Making a correct clinical diagnosis of amniotic fluid embolism is admittedly difficult. We believe it to be a distinct entity though it is hard to imagine the seemingly slight alterations in the lungs causing the respiratory distress which may and does bring on death as it occurred in this case. Our patient failed to show signs of external or internal bleeding hence we assume (correctly?) that intravascular blood clotting and defibrination did not take place. There was no sudden onset of shock immediately after delivery as might be

with uterine inversion or rupture of a viscus or tumor. The placenta appeared normally implanted and seemingly separated easily and at the proper time. Its vessels appeared normal and unruptured. The pre-existent toxemic state did not become aggravated by the labor and delivery, thus ruling out eclampsia. There were no findings to point to sudden cardiac failure or to a cerebrovascular accident. The patient tolerated her anesthetic quite well and did not vomit; therefore probably did not aspirate stomach contents. She was not known to be diabetic and never had glycosuria. She had nothing to point to a venous thrombosis which could give rise to a pulmonary embolism.

This set of circumstances characterized by the *absence of internal and external bleeding and other catastrophic phenomena* in a patient who successfully came through a long tedious labor but fairly traumatic delivery focuses our attention on the diagnosis of amniotic fluid embolism. What is the lethal factor in this entity? Is it the occlusion of pulmonary arterioles and alveolar capillaries with infarction, is it a form of a phylactoid reaction with uterine pulmonary infarction, is it intravascular clotting and fibrinogenemia, or is it some dithy combination of these factors? We sincerely hope that our colleagues in pathology will before long be able to present us with the correct answer.

In this case I believe the clinical diagnosis to be amniotic fluid embolism with acute circulatory and respiratory failure.

Dr. Rubin's diagnoses:

1. Amniotic fluid embolism
2. Acute circulatory and respiratory failure

PATHOLOGIC FINDINGS

Dr. R. F. Y. The body was that of a well developed and well nourished white female, 35 years of age, showing external evidence of recent parturition. The mammary glands showed gestational hypertrophy. The abdominal wall was flaccid and there was a separation of the rectus muscles. The fundus of the uterus was palpable at the level of the umbilicus. There was a recently sutured episiotomy incision on the left posterolateral quadrant of the introitus. Blood clots were present in the vagina. The skin and mucosae were pale. There were no petechiae. The face was somewhat puffy. There was no peripheral edema. The pupils were equal and midposition. There were no palpable lymph nodes. The body was 60 inches in length and weighed an estimated 130 pounds. Examination of the lower abdomen revealed an enlarged postpartum uterus. There was no excess fluid or blood present in the peritoneal cavity. The uterine veins were large, very tortuous, and thrombosed. Thrombosis extended into both broad ligaments and along the ovarian veins to the left renal vein and to the inferior vena cava. The lungs were well expanded. Pulmonary

arteries contained postmortem clot. On cut section the lungs were not remarkable. There were no other significant gross findings.

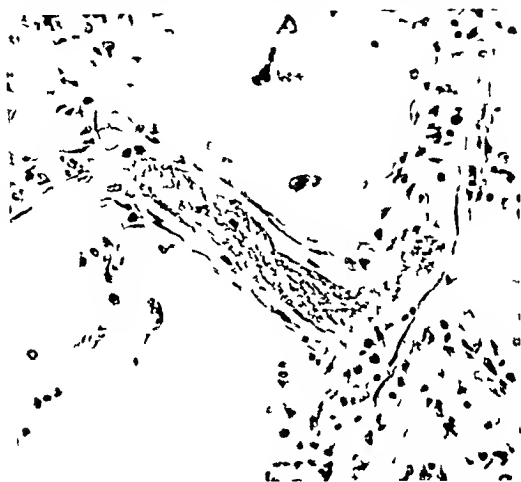


Figure 1 Fibrin embolus occluding a pulmonary capillary ($\times 440$)

Microscopic examination of the uterine and ovarian veins show an extensive ante mortem thrombosis. In the material in the central portion of the clot were questionable squamous and desquamated endothelial cells. Microscopic sections of lung showed multiple small fibrin clots occluding many of the pulmonary arterioles and the alveolar capillaries (figs 1 and 2). Fat stains showed accompanying small amounts of fat associated with these thrombi. Sections of the liver showed a moderate fatty vacuolization of hepatic cells. The periportal spaces were excessively cellular containing lymphocytes, a few polymorphonuclear leukocytes and eosinophils. No necrosis was present. Sections of kidneys, ovaries and uterus showed a rather extensive decidual reaction of connective tissue.

In summary pathologic examination would indicate that death was due to a widespread occlusion of pulmonary vascular bed by fibrin and fat emboli.

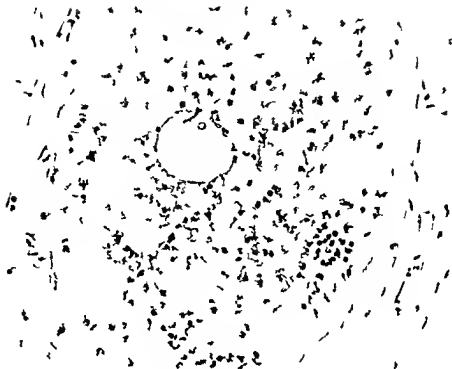


Figure 2 Fibrin embolus containing amniotic fluid cells in a pulmonary artery (x 20)

Thrombosis in the pulmonary vascular bed is best explained on the basis of expression of amniotic fluid containing thromboplastin into the venous system. The clinical history is consistent with reported cases of amniotic fluid embolism. While there was moderate fatty degeneration of the liver, other anatomic changes of the system were not noted. There was no evidence of an acute coagulation deficiency, though this may possibly have existed. Blood studies to rule this out were not done before death, nor was the blood examined immediately after death to ascertain the possibility of this occurrence.

Pathologic diagnosis

Thrombosis of pulmonary vessels by fibrin and fat emboli (amniotic fluid embolism)

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PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army, Navy, and Air Force have recently received temporary promotions to the rank indicated

Medical Corps

L. wre ce J Adams Capt USAF	G rald F Dobel Lt USN
Geo g M. Aki Jr Lt USN	Robe M Donaldso Jr Lt USN
Richard L. Allen, Lt USN	M ha l B Dool y Lt USN
Robert G. All Lt USN	Donald R Ounning Capt USAF
Richard T. Aro st, Jr, Lt USN	Sear E Edwa ds Lt USN
Jo O Ar ingto Capt USAF	G o g E Ehrlich, Lt USN
Ba d C. Arthur Lt USN	F d S. El sh, Lt USN
Arthur H. Auerbach, Lt USN	Fred ck M Ewa s Lt USN
Jame K Ave t Jr Lt USN	Ch nsi g L Ew g, Lt USN
Donald E. B hr Lt USN	Jam s B T Fo r Lt USN
Norma W. Baul y Lt USN	F e A. F t Lt USN
H ward Bal n, Lt USN	Robert R Fowl r Lt USN
Georg C. B r t t Capt USAF	Go don R. Freeman Lt USN
Georg W B Lt USN	P ul D Fuchs Lt USN
Fred ick D Beckw th Lt USN	Jo ph T Gall ghet Capt USAF
Delf j B ltr o Capt USAF	William F Gebhart Lt USN
Rob t Bernha d J Lt USN	R bert P G ry Lt USN
Vincent J B s Lt USN	B j Gil Lt USN
Fauk S. Bl too J Lt USN	M y A Goldsr Lt USN
Da d Blau Lt USN	W yn V G b g Lt USN
L ster J Bola ch, Lt USN	J seph Ge nsb g Lt USN
Robert F Boudreau Lt USN	Edw d S Gr nw ld Capt USAF
Reg nald S Bowen Lt USN	Edwin D G ulf n, Lt USN
Rob rt L Br tma Lt USN	D ni l J G ss Capt USAF
Edgar G B unstein Lt USN	Carr li S Hamilt o Lt USN
Thoma V Br na Lt USN	Charl s H. Hart, Capt USAF
J m s J B od Lt USN	k mel J H Lt USA
Bry n G Brogd n, Capt USAF	O c e G H n Lt USN
D ni l J B o Capt USAF	Harry H. H w J Lt USN
Cha l P Bugg Lt USN	Vnce L Hutchi Lt USN
Richa d L. Butler Capt USAF	William Hym Lt USN
William M. Byrd Lt USN	Dom c A. I troc so Capt USAF
Gr ham V Byrum Lt USN	J m A. J cob J Lt USN
G rald W Cady Lt USN	H rwin B J miso Lt USN
Donald L. Carr Lt USN	G ard W J uchl Lt USN
William C Ch a Jr Lt USN	J hn R. Jo e Lt USN
Sa f d Chod h Capt USAF	Mark S J l Lt USN
K j l H Chr ua Lt USN	J hn S Jo y Lt USN
B n L Cr t r Lt USN	J hn R. K e Lt USN
Ge g O Cr p Jr Lt USN	Stuart L Keill Lt USN
Joh S Dard Lt USN	Thomas J Kell y Jr Lt USN
Fr is T O y Lt USN	Phil p A Kha tallah Lt USN
Robert A. Deach, Lt USN	Raymo d N F K il n, Lt USN
D ni l P Del v Lt USN	J mes M Kulg e Jr Lt USN
D l B D lg d Lt USN	Steve T o H Lt USN
O ni l R D me Lt USN	Dougl a R Noth Lt USN
H bert W Dickerman, Lt USN	Thom L K wy Lt USN

Medical Corps—Continued

R be L Kulp Lt USN
 J hn E Kyd Capt USAF
 J h P L m Lt USN
 J m W L dw th Lt USN
 K neth C. L b Lt USN
 Donald D L gr f Lt USN
 H b l W L b Lt USN
 Jul us L Lt USN
 Harry L L h J Capt USAF
 Col C. M L d, Lt USN
 Chal G Magnan J Lt USN
 J hn W Maha Capt USAF
 Sal L Ma na, Capt USAF
 J hn P Ma dan Capt USAF
 V H M hbanck J Col USAF
 M ur G Ma tt Lt USN
 K th D Matsum to Lt USN
 L wt S. M G J Lt USN
 Donald M M ho J Lt USN
 Rus H R Melle Lt USN
 Chal E. M red b, Lt USN
 K h E Moor Lt USN
 E et D Mum w Capt USAF
 J m Mush Lt USN
 B ma d N N h nson, Capt USAF
 J hn C. N kl Capt USAF
 F k J Noous Lt USN
 Gerard B Dd ll Lt USN
 R hard H Oldfa he Capt USAF
 Mo s F O good, Lt USN
 R b rt C. O g n, Lt USN
 Benjamin S. P s Lt USN
 Will m G P ge III Capt USAF
 J eph A P l d no Lt USN
 P tr k H P pp Capt USAF
 Nulf d Parker Capt USAF
 J k H P Lt USN
 P qual A. P m Capt USAF
 J hn F P ry Lt USN
 J ho R. Philp Lt USN
 Edward W P y Lt USN
 Rob J P Lt USN
 Har y J P ul Lt USN
 Philip E. Ramire Lt USN
 Rus H E. Rand ll Capt USAF
 J eph J R d Lt USN
 P R mus Lt USN
 H be C. R ed Capt USAF
 H gh R yn ld Lt USN
 Lynn S Rich d J Lt USN
 B nn J Ril y Lt USN
 Th odor Y Rodg III Lt USN
 J ph P R Capt USAF
 Do et R th Lt USN
 H ber R henb g Lt USN
 Allen J S n Lt USN
 M E Shaf n, Lt USN
 Arthur O S hlp Lt USN
 J m N S hm tt Lt USN
 G hard W Schm tz Lt USN
 Scanl y H Sch id Lt USN
 Arthur J S he Lt USN
 Jul us L S hw rt Lt USN
 Geta d P Sheldon, Lt USN
 Ma M She man J Lt USN
 R chard L Sff d Lt USN
 Stuart R. Sil Lt USN
 H rbe I S s Lt USN
 As J Sm th, Lt USN
 R b rt C. Sm h Lt USN
 Wl y R. Sm th, J Lt USN
 L w H J Smyth Lt USN
 J na Sode Lt USN
 J hn S Sp tt J Lt USN
 Chal Ste Lt USN
 Charl C. S wart Lt USN
 Edga B S wa Lt USN
 J m M Sorm Lt USN
 Fanc J Sull Capt USAF
 Ma ti R Sull n, Lt USN
 Ru ha d F Sullrv n, Capt USAF
 R ber F Sull va Lt USN
 W l T Sumn Lt USN
 F ek W Sumn Capt USAF
 Myer Sut n, Capt USAF
 Georg W T sga Lt USN
 J seph T ad J Lt USN
 Th od T T l J Lt USN
 Ar hur F Thomp n, Lt USN
 M J Tho hin ky Capt USAF
 S phen T ms Capt USAF
 H ary S. T l Lt USN
 J l K Turk l Lt USN
 J ph J Tyrt ll Lt USN
 Edwa d R. V S oort Capt USAF
 K tm R V gg he g Lt USN
 L p ld A Vg Lt USN
 Al V lkma Lt USN
 Ca l F V n, Lt USN
 William A. W id Lt USN
 G urg A. W me Capt USAF
 David B W ne Lt USN
 Marv L Whatman, Capt USAF
 Rus I G Williams n, Lt USN
 F k L Wl n, J Lt USN
 L g W W d Lt USN
 H w d S Y H Lt USN
 Will m F Zehl Lt USN
 J m H Zi Capt USAF
 A tha J Z dl Capt USAF

Dental Corps

Robe Bail y Capt USAF

J hn F Buche Lt Comdr USN

Dental Corps—Continued

Sun R. Cloud Lt. Comdr USN
 Stewart T. Elder Lt. Comdr USN
 Irving Frank I. Lt. Comdr USN
 John R. Hammond Lt. Comdr USN
 William R. Hutchins, Jr., Lt. Col. USAF
 Charles E. Kautler Lt. Comdr USN
 Donald S. Kraus Lt. Comdr USN
 Earl L. Lampshire Lt. Comdr USN
 Emory J. Lusk Lt. Col. USAF
 John H. Mahold Jr. Lt. Comdr USN
 Edward R. Maun, Capt. USAF
 Bernard E. McDermott Capt. USAF

Walter J. Michalak Lt. Col. USAF
 James A. Mitchell Lt. Comdr USN
 Wayne A. Nelson, Lt. Comdr USN
 Thomas J. Papp Lt. Comdr USN
 Henry J. Philie Jr. Capt. USAF
 Henry H. Sefteld Jr. Lt. Comdr USN
 John R. Sheppard Lt. Comdr USN
 Delmar Smith, Lt. Comdr USN
 Alonza D. Steel Jr. Capt. USAF
 David I. Tuman Lt. Comdr USN
 Enrique V. Vint Jr. Lt. Comdr USN
 Guy A. Woods, Jr. Lt. Comdr USN

Veterinary Corps

Victor H. Berry Capt. USAF
 Victor C. Bishop Maj. USA
 Donald L. Dea Col. USA
 Joseph B. Doak Capt. USAF
 Alphus H. Seely Col. USA
 Arthur R. Skow Capt. USAF

Walter Smet Col. USA
 William B. Snodgrass Col. USAF
 John L. Terry Capt. USAF
 Harold D. Valentine Maj. USAF
 William J. Welch Capt. USAF
 Donald H. West 1st Lt. USAF

Medical Service Corps

John L. Anderson 1st Lt. USAF
 Gerald J. Armatu Capt. USAF
 Herbert C. Barnett Maj. USA
 Charles E. Bell Maj. USA
 Russell C. Cheek, Lt. Col. USAF
 Manuel S. Cochran 1st Lt. USAF
 George C. Cowell Lt. Col. USAF
 Emil Danko Maj. USAF
 Lawrence C. Davis Jr. 1st Lt. USAF
 Leslie Davis Capt. USAF
 John V. DeLucas Maj. USA
 Henry R. Dick Maj. USA
 Charles C. Dill Lt. Col. USAF
 George L. Felt 1st Lt. USAF
 Robert W. Gehrig 1st Lt. USAF
 Neil J. Gitelman 1st Lt. USAF
 John R. Gien Capt. USAF
 Joe E. Hunt, Jr. 1st Lt. USAF
 Eugene J. Kamr 1st Lt. USAF
 Raymond L. Kistner Maj. USAF
 Godwin S. Kjelson Col. USAF
 Robert E. Lindert Capt. USAF

James J. Long Maj. USA
 William J. McDermott Maj. USA
 Edward S. Nugent, Capt. USAF
 John H. Patrick, Jr. Maj. USAF
 James D. Peter 1st Lt. USAF
 James W. Polkinghorn Col. USAF
 Thomas E. Powers 1st Lt. USAF
 William C. Reichenbach, Capt. USAF
 John D. Reger Capt. USAF
 Edward M. Seright, 1st Lt. USAF
 Olaf J. Simpson 1st Lt. USAF
 John W. Smiddy 1st Lt. USAF
 Benjamin R. Snyder Jr. Capt. USAF
 James T. Steele 1st Lt. USAF
 Henry O. Welch, Jr. 1st Lt. USAF
 R. D. Willard Capt. USAF
 Elwood M. Wright Col. USA
 William J. Wyatt Lt. Col. USA
 Virgil T. Yates Lt. Col. USA
 Leif M. Zimmerman 1st Lt. USAF
 George Ziemann Lt. Col. USAF
 Harry Zisk Jr. Col. USAF

Women's Medical Specialist Corps

Mary N. Davenport 1st Lt. USAF
 Elsie L. Deming Capt. USAF
 Martha J. Feltner 1st Lt. USAF
 Filomena R. Fusco Capt. USAF
 Barbara D. Gray 1st Lt. USAF
 Lillian H. Drake Maj. USA
 Katharine Leonard Maj. USA
 Mary Lipcomb Maj. USA

John C. Lydon Maj. USA
 Julia R. Moynihan Capt. USAF
 Helen Murphy 1st Lt. USAF
 Kathleen D. Murphy 1st Lt. USAF
 Doris L. Northcutt Capt. USAF
 Margaret E. Pontier 1st Lt. USAF
 Oliver J. Potter Capt. USAF
 Evelyn G. Summers Maj. USA

The following officers have recently received *permanent* promotions to the rank indicated

Medical Corps

Curt P Artz *May USA*
 J m N B n, J *May USA*
 A g l A C a d n a *Col USA*
 J hn E. Edw d *May USA*
 N l B H dley *Capt USAF*
 Cl B H w r *May USA*
 R b r t C. K b J *Capt USAF*
 Buc L L ing tone *Capt USA*
 Geo ge H. M L n, J *Capt USAF*

Byro L Mull *May USA*
 J hn B N r t n, *Capt USAF*
 Charl R. W Reed *May USA*
 L wis C. Sh ll b g *Col USA*
 H l E. S edd *Capt USAF*
 R b t G. Thomp n, *LL Col USA*
 T J T w n, J M, *USA*
 Chal W Upp *Capt USAF*
 Will m E W ll *Capt USAF*

Dental Corps

S d y A H g *Capt USAF*
 Cha l J Maha *Capt USAF*
 Ed n d R. Raski *Capt USAF*

Raym d W Shaddy *Capt USA*
 M b E. Shumak *May USA*
 W y W Th robe ry *May USAF*

DEATHS

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 f m th Fra kford H p tal S hool f Nur g Phil d lphia P pp t d
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 6 J 1955 g 25 t V Van, Okl f jur t d to-
 m bl d t.

BRANSON Edward Cal Cap MC USA K xvill T nn gn d
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 1953 d d 28 M y 1955 ge 24 t P m C y B h Fl f d tal
 d w f

QUINN Juanita Al C p ANC USAR Ter H l d 98 h G l
 H p tal G rm y g d t d 1241 f m th M hod t H p tal S h l f
 Nur g l dianap l l d pp t d d l t na 20 J uary 1943
 d d t d ty 26 J ary 1943 l d f m duty 11 O b
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ROBERTS R h d Edw d Fir l t M C USAR J h town P
 gned Carg H l pre C mp y 3461 S rv U t Camp R k
 Al pp t d nd l ut 28 July 1950 ord d d ty
 26 A g 1950 d d 20 M y 1955 g 32 th U S Army H p l
 C mp Ruck Al f jurie d craft d

NEW CHAIRMAN OF A M A MILITARY MEDICINE SECTION



Outgoing chairman Maj Gen I S Ravdin MC USAR (left) congratulates his successor Rear Adm H Lamont Pugh (MC) USN (right) following election of officers of the Military Medicine Section of the A M A

At the recent American Medical Association meeting in Atlantic City N J Rear Admiral H Lamont Pugh (MC) USN former Surgeon General of the Navy was elected chairman of the Military Medicine Section. Captain Cecil Andrews (MC) USN Director Professional Division Bureau of Medicine and Surgery was elected secretary The outgoing officers were Major General I S Ravdin MC USAR chairman and Colonel Charles L Leedham MC USA secretary



The numerous illustrations are satisfactory. A concise summary sure to be popular with students is provided at the end of each chapter. Although no references are given there is a well chosen list of Selected Reading preceding the index.

This volume is well organized, clearly written, and certain to achieve a firm position in the family of textbooks on comparative anatomy.

—BENNETT F. AVERY, Capt (MC) USN

THE ABNORMAL PNEUMOENCEPHALOGRAPHY by L. M. D. d. J. M. D.
d. B. m. d. S. Ep. t. M. D. 2d d. 518 p. g. h. ghly r. d.
w. th 696 il. 291 f. gur. L. & F. b. g. Ph. d. lph. P.
1955 P. \$15

The second edition of this excellent work is identical for the most part with the first edition published in 1950, however, significant differences which make it a better book are important additions to the chapters on treatment of the posterior cranial fossa, chronic subdural hematoma, and cerebral atrophy. The bibliography has been enlarged and errors in the text of the first edition have been corrected.

The text includes a discussion of all lesions described as capable of producing significant changes in the pneumoencephalogram. Part I concerning tumors of the brain includes a short but excellent chapter on the pathology of brain tumors. The neoplasms are discussed in the first section. The second section deals with non-neoplastic tumors and includes chapters devoted to the discussion of chronic subdural hematoma, brain abscess, syphilis, fibrous meningitis, aneurysms, intracranial aneurysms, and cerebral thrombosis. Part II, consisting of 11 chapters, is entitled "Neurotumorous Lesions of the Brain." The text is supported and amplified by many detailed case histories and numerous illustrations of excellent quality.

This volume together with an earlier volume, *The Normal Encephalogram*, by Cornelius G. Dyke and Leo M. D. v. Doff should be considered must reading by students and residents in radiology, neurology, and surgery. *The Abnormal Pneumoencephalogram* is an authoritative reference book for the more experienced practitioner of radiology, neurology, and pathology.

—ELMER A. LODMELL, Col MC USA

DISEASES TRANSMITTED FROM ANIMALS TO MAN by Thom. G. Hull
Ph. D. 4th ed. 717 p. g. il. tr. d. Ch. l. C. Th. m. Publ. h.
Sp. g. f. ld. III. 1955 P. \$12.50

This revision of the well known text has been expanded 25 percent over the previous edition (1947) and the number of contributors increased from 15 to 26. The book is concisely written in an easily readable format; the profuse black and white illustrations, tables, and figures are generally clear and with the exception of the microphotographs helpful in interpretation of the text. Referenced at the end of many chapters are voluminous and useful.

The work is especially suitable as a basic text for medical and veterinary students and as a comprehensive reference manual for the practicing public health worker physician and veterinarian. It is also of value to the military preventive medicine officer because it contains data on a number of exotic diseases rarely described so succinctly in one volume. A relative emphasis on certain animal diseases (vibriosis Newcastle's disease glanders) which are occasionally found in humans in frequent contact with animals indicates that the book is written primarily for the veterinarian.

The weakest portions of the work are those which might well be of the most general interest: the section on the relation of human and animal diseases and chapter 22 "Infections Produced by Animal Parasites." In these a number of important diseases such as hydatid disease African trypanosomiasis and the trematode diseases transmitted by animals are only briefly mentioned. One wishes the authors had discussed in more detail the ecology and epidemiology of all the diseases described because the book is eminently suitable for such discussion. Therapeutic measures against well known diseases have been wisely minimized or omitted, such information being readily available from other standard texts. Excellent summary tables which classify diseases transmissible to man from animals are included at the end of the book. —PHILIP R. BECKJORD, Lt Col MC USA

WORLD ATLAS OF EPIDEMIC DISEASES First of four issues of Part II edited by Professor Dr med Ernst Rodwaldt under the Sponsorship of the Heidelberger Akademie Der Wissenschaften 168 pages 10 colored maps Falk Verlag Hamburg Germany 1954 Price 40 Deutsche Mark plus extra charge for postage and packing

Geographic studies concerning the epidemiology of world diseases are accumulating regularly and with commendable speed. The second part of this original atlas contains both a continuation of the studies of certain previously reported diseases geographically and new clinical entities. The extension of dysentery sleeping sickness and trachoma studies to the African continent relapsing fever with particular reference to the 1920 epidemic in Russia and the distribution of smallpox in Europe up to 1948 make new and fascinating reading. More recent data on animal and human rabies in central Europe include cases through 1953. Coxsackie virus infection in Europe including Scandinavia has been added to the earlier observations. A new venture into the North and South American continents the first studies in these areas concerns the vectors and the human incidence of Chagas disease.

The descriptions of the diseases in both German and English are well written and clearly expressed. The excellent maps are of the same caliber as those in the first part. Also included is a new population density map of the United States. All the descriptive sections and the maps are arranged so that they are inserted into the original loose leaf binder. —GOTTLIEB L. ORTH Col MC USA

LIVER INJURY edited by F W H Jfba M D 231 page Illustrated
 Sp d by th J lah Ma y J F d t on N w Y k N Y P i
 \$4 25

The program of this conference report precludes the isolation of the several branches of science from one another and thereby encourages the exchange of methods research plans concepts and difficulties Without formal speech making the full participation is conducive to communication and cross fertilization of ideas Informality and tempo has been preserved in the published transactions in order to share with investigator and students an insight into scientific minds exhibiting mutual interest respect trust and co-operation

Guest participants (Lundsgaard Gurin Kostlitz) introduce three seminars on the liver and carbohydrate fat and protein metabolism respectively The experiences gained in their laboratories stimulate critical discussion and informal group interchange The fourth seminar on cardiovascular lesions in choline deficient rats relates the experiment of Hartroft and Wilgam which stemmed from studies on the liver in choline deficiency The 20 participants represent all the significant branches of science related to the problem of liver injury Each has achieved the unqualified status of an authority in the field of medicine or closely related discipline

Although the format of objectives method result and summary is lacking each paper includes a bibliography and is illustrated with graphs charts and microphotograph The index is cumulative from 1949 until the twelfth and final annual conference on liver injury Thus this volume completes a series which may serve as a reference and stimulus

The average clinician will find the volume undemandable but should not expect to reach ready conclusions and summarizations

—JACK C SHRADER Lt Col USAF (MC)

THE YEAR BOOK OF THE EYE EAR NOSE AND THROAT (1954-1955 Year Book of Otolaryngology) edited by D r k V L M D and J b R L d ay M D
 461 pages Illustrated The Year Book Publishing Co Chicago Ill
 1955 P \$6

The Year Book of 1954-1955 contains abstracts of articles published during 1954 It is divided into three sections Ophthalmology 243 pages otolaryngology 97 pages and rhinology 101 pages The abstracts are fully chosen by outstanding specialists in the field and for the most part practical and interesting to the specialist The editorial comment on many of the controversial articles add much to the value of the book The subject index is especially complete for such a large volume of articles

This Year Book can be recommended as a helpful aid in reviewing the constantly increasing number of articles in the fields of ophthalmology and otolaryngology —SHIRLEY A FUHRING Capt, (MC) USN

August 1955)

LABORATORY MANUAL OF BIOCHEMISTRY by Benjamin Harrow First Book, Abraham Ma u Gilbert C. H. Stone and Harry Wagreich 4th edition 164 pages illustrated W. B. Saunders Co. Philadelphia Pa 1955 Price \$3

The latest revision of this manual provides a choice and range of learning experiences which are consistent with the needs of the pre-medical and medical student. On this score one is impressed with the frequent but judicious dependence upon the better known clinical laboratory procedures. It would appear too that this laboratory manual could be effectively employed in conjunction with any of the standard biochemistry texts.

About one third of the book (51 pages) is devoted to blood chemistry this chapter being a compendium of tested procedures widely employed in clinical chemistry. One would be hard pressed to find or to construct a more efficient compilation of such procedures. The chapter on colorimetry includes a functional treatment of the Duboscq colorimeter, filter photometers and spectrophotometers. The chapters devoted to carbohydrates, lipids and proteins include the standard tests, plus an introduction to the techniques of polarimetry and chromatography. The chapter on enzymes includes an exercise in tissue respiration measurements. Each of these special procedures is preceded by a brief explanation of the principles concerned.

Directions for the preparation of qualitative reagents are placed in the appendix. This arrangement promotes the simplicity of a strikingly unhampered statement of the separate procedures. Figures are largely confined to diagrammatic representations of equipment which might be expected to be unfamiliar to the college senior e.g. Van Slyke manometric apparatus, Wabug equipment and micro-Fjeldahl assembly. The student will appreciate the use of sturdy metal rings in place of the more conventional bindings which allows the opened book to lie flat on the laboratory table. This binding also permits the alternate extension of single pages.—THADDEUS J. DOMASKI Lt. Col. USAF (MC)

THE STORY OF DENTISTRY by M. D. K. Bremner D.D.S. Revised edition 462 pages Dental Items of Interest Publishing Co. Inc. Brooklyn N.Y., 1954

This volume is a compilation of materials about dentistry and allied fields first published in 1939. According to the author the volume was written because the facts must be taken from the libraries and brought to the market place. The success of his effort is attested by the publication of a third and enlarged edition.

Presented in a highly readable and interesting manner the author manages nevertheless to convey considerable facts. The book is a source book in the strict sense of the word, it contains a sustained narrative of the progress of dentistry and the human interest stories include the history of dentistry.

Topics discussed range from the purely professional aspects of dentistry to the more mundane considerations of financial factors and specialized training facilities. There is reading of interest to a wide audience. This reviewer was particularly interested in such topics as those which analyzed and discussed the effect of the inventions of vulcanite and the dental engine. For information of this type is not often brought so attractively to the lay reader. Members of the profession familiar with such knowledge will find greater value perhaps in such topics as the account of Taggart vs the Dentists Alliance and defeat of the Taggart patent. Moreover the dentist confronted with the need to make speeches before public gathering will find this volume a handy reference to provide illustrative material.

—MAE M. LINK, Ph D

PSYCHOSURGERY AND THE SELF by Mary Freeman, Ph D and
Walter F. Munn, M D Ph D 118 pages G & Stratton Inc New
York N Y 1954 P \$3

Except for one chapter written by Dr. Freeman which is a somewhat technical and descriptive review of development in psychosurgery this work is primarily concerned with the psychological appraisal of the postlobotomy personality. Chapters are devoted to an examination of previous psychological studies, glimpses of the postlobotomy personalities consisting of generalizations developed from the senior author's observations and followed by a hypothesis of self continuity which attempts to explain the nature of the alterations in the self-concept produced by psychosurgery. Others are devoted to the appraisal of this hypothesis by the introduction of the "Robinson-Freeman Tests of Self Continuity" which the authors caution were developed for research purposes only. These tests are individually called The Self Regarding Span Test and the Sensibility Questionnaire. Both are presented in the appendix together with the method for administration.

The study around which the book is written consists of 51 prefrontal lobotomy patients who served as the experimental group and who were matched with 17 nonlobotomized patients in regard to age, diagnosis and length of illness. The latter had improved without psychosurgery. Test differences between the groups were found to be highly significant in the expected direction. Two subjects with intractable pain were also given the test pre- and postoperatively with results that seemed to support the hypothesis. An evaluation of this experiment is difficult because of a number of factors among which are the small number of controls, the unconventional manner of their selection, the lack of cross validation data and the fact that patients considered unimproved were excluded from the study. It seems to this reviewer that what is offered in this book could better have appeared in condensed form in one of the professional journals. As an article it would have been excellent—a book it seems to leave too many questions unanswered.

The authors are to be commended on their clear and effective use of language for providing a model for interdisciplinary research for calling attention to the rich potential in psychologic research offered by psychosurgery and for their excellent bibliography consisting of 179 entries —THEODORE C KAHN MAJ USAF (MSC)

THE STUDY OF THE BRAIN by Hyman S Rubinstein M D Ph D 209 pages illustrated Grune & Stratton Inc New York N Y 1953 Price \$9 50

In a straightforward manner and by a popular functional approach the author succeeds in presenting a brief well organized account of the anatomy of the brain and spinal cord This should help not only the medical student but also those who wish to specialize in neurology and psychiatry The text is designed as a companion to the author's stereoscopic atlas The inclusion of significant plates from this atlas as well as drawings of transverse sections of the spinal cord and brain stem in this book however makes it complete in itself The drawings are exceptionally well labeled

There are 18 chapters the first few devoted to dissection and general survey of the brain a welcome and well timed emphasis The remaining chapters for the most part describe the various functional systems The author's concise style of presentation is illustrated in the last three chapters which are related to the cerebellar system extrapyramidal system and the hypothalamus The index is adequate and the bibliography comprehensive

This book should be of particular value to those who are interested in gaining a fairly detailed and well synthesized concept of neuroanatomy It also readily lends itself to a fast review of the subject

—ARTHUR J LEVENS Lt Col MC USA

CIBA FOUNDATION SYMPOSIUM ON HYPERTENSION HUMORAL AND NEUROGENIC FACTORS edited by G E W Holstenholme M B B Ch and Margaret P Cameron M A 294 pages 73 illustrations Little Brown and Co Boston Mass 1954 Price \$6 75

This book is an excellent reminder of our ignorance concerning the clinical entity of essential hypertension It raises many old questions such as how can hypertension be defined and how does hypertension experimentally produced in animals relate to the human disease The symposium does not provide the complete answers Many new problems are discussed These include the persistence of hypertension even after removal of pheochromocytoma and the return of the epinephrine and norepinephrine excretion to normal and the question as to whether high blood pressure is an essential part of the hypertensive disease process

The book is a must for anyone engaged in hypertension research It also belongs in all medical school libraries The book is not for the medical school student and general practitioner and is of little value to the busy internist who is not keenly interested in this important research field —WALTER C DAVIDSON Col MC USA

SURGICAL TECHNIQUES by *F M Al Akl*, M D 341 pgs ill tr d
 M G w-H I B k Co I c N w Y k N Y 1954 P \$12

This book contains a series of excellent drawings depicting the surgical anatomy and technic of over 30 commonly performed operations with a set of concise explanatory notes of each step illustrated and more complete notes at the end of each procedure. The medical student, intern beginning surgical resident and general practitioner will find this book a valuable reference and quick review of the surgical anatomy and technic of the operations illustrated. The more advanced surgeon will find the illustrations interesting and admirable in their simplicity and completeness but will not be intrigued by the complexity of the problems illustrated.

The operations listed are standard and proper with some exceptions the first method shown for repairing femoral hernias is somewhat outmoded because most surgeons now use the supra inguinal approach and Cooper ligament repair. The appendectomy illustrated is more elaborate than necessary simple ligation and amputation of the appendix with cauterization and without inversion or burial of the stump has proved to be sufficient. In the uterine suspension illustrated suture of the uterosacral ligaments behind the cervix believed to be an important part of this operation has been neglected. Supracervical hysterectomy should be mentioned only to be condemned in the average patient. If hysterectomy is to be undertaken a complete hysterectomy should be done to avoid carcinoma in the cervical stump. Varicolectomy is an operation of rare and doubtful value because most varicoceles will subside with conservative treatment or at least a higher amputation above the inguinal ring is a better operation. Finally mere high ligation of the saphenous veins for varicosities without concomitant stripping of the saphenous systems is insufficient.—CLINTON S L YTER C L MC USA

HYPEROSTOSIS CRANII by *Sherwood Moor*, M D 226 pgs ill tr d
 Ch I C Thom P bl h Spr gf Id Ill 1955 P \$10 50

This book is an extensive monograph on hyperostosis of the skull. According to the morphology of the thickened bone and the areas of the skull involved the author classifies them into four types. The best known of these types is hyperostosis frontalis interna.

The subject is approached from the radiographic aspect cases being collected by review of film of over 10 000 patients. Measurements of the size and thickness of the skulls were made from the film and similar measurements were made on a number of dried museum specimens and radiographs of these specimens. The data so derived are given in tabular and graphic form. Attempts made to establish norms for skull measurement.

A large part of the book is devoted to clinical aspects of hyperostosis cranii. The hospital records of over 500 patients with this condition and for control charts of a larger number of patients without hyper

ostosis crani were reviewed and tabulation and analysis of general and neuropsychiatric findings were made. The results are presented in tables and graphs. Etiology, pathology and morphogenesis are discussed at length. Possible relationship of the condition to various endocrine disorders is discussed in particular detail.

The book is divided into 20 chapters plus two appendixes and seven preliminary sections. There is considerable overlap in the content of these subdivisions. There are a number of typographical errors and grammatically incomplete sentences, some of them seriously distracting from the sense of the statements in which they occur. Cross references are given by chapter only, necessitating a search for the reference. Some of the author's conclusions contradict previous statements. Reproductions of radiographs are good to excellent. The numerical data, particularly that derived from the clinical charts, is somewhat difficult to correlate and digest due to the manner of presentation. In spite of these defects, the book presents a great deal of factual material and there are many interesting speculations and theories in regard to hyperostosis crani. It will serve as a source of information for those interested in hyperostosis of the skull.

—LONGSTREET C. HAWLTON, Lt Col MC, USA

THE ANATOMY OF THE BRONCHIAL TREE by R. C. Brock M.S. 2d edition
243 pages illustrated. Oxford University Press New York N.Y. 1954
Price \$11

A monograph on the details of segmental anatomy of the lung could come from no more qualified observer than Mr. Brock, and publication of such a book at this time is in keeping with the increased interest that has been accorded thoracic surgery since the late war. The material comprising this book is derived primarily from the extensive study and clinical experience of the author at Guy's and Brompton hospitals in London, and it therefore assumes a practical value not true of the older anatomic concepts of the lung. Here is anatomy for every-day use, designed to improve diagnostic acumen and therapeutic accuracy in treating patients with pulmonary lesions.

The introductory chapter is devoted to the international nomenclature applicable to the bronchopulmonary segments. Adequate space is devoted to discussion of the role of bronchial embolism and posture in particular relation to lung abscess; this is basic information and is applicable to lesions other than abscess. Pertinent discussion is given to the levels of the lung fissures as recognizable in the living and the value of accurate information in planning surgical approaches. Specific chapters are devoted to each lobe of both lungs, as well as to the entire lung and its variants. These chapters are well illustrated with conveniently placed pictures of metal casts of the bronchial tree, correlated with color plates of injected lung specimens and clear radiographic reproductions. A final chapter devoted to the preparation of specimens should be of value for those interested in preparing teaching material.

The format of this second edition is a marked improvement over the first edition published in January 1946. The chapter devoted to the middle lobe has been expanded to more completely present the middle lobe syndrome. The bibliography credits significant contributions to the study of bronchopulmonary anatomy since 1880. This monograph should be available to all physicians concerned with the diagnostic or therapeutic aspects of pulmonary disease.

—THOMAS H. HEWLETT, Lt. Col., MC, USA

CORRELATIVE NEUROSURGERY by Edg. A. K. Bn, M. D., R. bert C. B. It M. D., R. b. rd C. S. bne d. M. D. and El. b. th Ca. l. Cro. by Ph. D. 413 p. g. Illustrat. d. Cha. l. C. Th. m. P. bl. b. Spr. g. f. Id. Ill. 1955 P. \$19.50

In addition to the author of this book there are 11 contributors, all of whose names are familiar to neurologists and neurosurgeons. It has been the aim of the authors to correlate neurosurgical techniques with the ever expanding knowledge of the neuroanatomist, neurophysiologist, and biophysicists. It could hardly be expected that a correlation of such widely spread information could be completely attained. This is the book which is so practical and straightforward nevertheless the authors have made an excellent step that deserves recognition. The importance of good plain roentgenographic studies of the skull of skillfully performed electroencephalography and of direct uncomplicated anatomical approaches to the surgical problems are all emphasized in this book.

This is a beautifully illustrated volume with some of the best half-tones and line drawings that are to be found in any current neurosurgical work, and the authors and publishers are all to be complimented on the fine physical quality of this volume. It is a useful and practical book for the young neurosurgeon and is certainly to be recommended as a ready reference on any neurosurgical service where there are residents in training. —JOHN MARTIN, Col., MC, USA

THE DEVELOPMENT OF MEDICAL BIBLIOGRAPHY by E. I. Il. Brodm. n. Ph. D. 250 p. g. Il. d. P. bl. h. d. by M. d. I. L. b. ry. A. u. 1955 P. \$5. Se. d. c. A. h. C. M. d. l. & Ch. n. g. l. F. l. y. f. Sc. f. M. ry. l. d. B. l. um. l. M. d.

All whose work in any way brings them into contact with medical literature and bibliography owe a debt of gratitude to Miss Brodman, the Assistant Librarian for Reference Services at the Armed Forces Medical Library. I should but pleasantly written highly documented essay the growth and development of printed lists of medical books and journals. William P. Th. fi. l. d. is c. v. red from Champier (in 1506) to the present difficult situation with the scattered bulk of medical literature. Some 250 general bibliographies are listed and the most important ones described. The most pertinent section—The Present Situation—dramatically covers a complete century.

The book is well illustrated and indexed and will prove interesting and helpful to many segments of the scientific population.

—S. O. WAITE, Lt. (MC), USNR

THE CLINICAL PHYSIOLOGY OF THE LUNGS by Cecil K. Drinker M D
D Sc 85 pages illustrated Charles C Thomas Publisher Springfield
Ill 1954 Price \$5.50

This easily read brief monograph is the outgrowth of many years of research by the author. The material was first given as a series of lectures and then assembled and amplified into its present form. The reader is taken naturally through a consideration of the arteries, the veins and capillaries, the bronchi and bronchioles, the nerves and the lymphatics of the lungs, although discussion of gas exchange *per se* is omitted. The reader thus gains a clear concept of the anatomic physiology of the lungs and thereby a basic understanding of many disease processes in the lung. The easy prose and the constant repetition with the integration and reintegration of each new idea presented marks this as a fine teaching text. One regrets its brevity and that the author did not finish the pattern of lung physiology by adding the material on gas exchange he knows so well.

The illustrations are well done, as is the printing and binding. It is regrettable that this modest book may be so overpriced that it will fail to find a place in many personal medical libraries.

—ALFRED H. LAWTON, M D, PH D

SIMPLIFIED DIABETIC MANAGEMENT by Joseph T. Beaumont J M D
and Herbert T. Kelly M D 6th edition 194 pages illustrated J B
Lippincott Co Philadelphia Pa 1954 Price \$3

This book for the diabetic patient presents in easily understood language the essential facts that he needs to know regarding his disease and its management.

The importance of diet and weight control, both as prophylactic measures and as treatment, is clearly and properly emphasized. The various complications, their warning signals, and their prevention are adequately described. The unit system of calculating the caloric and nutritive value of foods is explained, and a conversion table is presented whereby the unit system may easily be converted into the exchange method recently released by the American Diabetic Association. The instructions for measuring insulin and the technique of injection are clear and concise and are well illustrated with photographs.

The chapter on diabetic hygiene is not as well organized as the others. Under the heading of "Sweating Treatment" there is advice regarding the daily cleansing of the teeth, taking rest, and avoiding worry, including the statement that "it is of the utmost importance that the bowels move regularly at least once a day." Most authorities might question the statement regarding utmost importance, especially because it might encourage an overly conscientious patient to fall into the cathartic habit.

These minor discrepancies do not, however, appreciably detract from the overall worth of this excellent volume.

—HUBERT H. CARROLL, Capt (MC) USN

MEDICAL TREATMENT OF MENTAL DISEASE by D I J M C thy
 M D LL D nd K th M. Cor M D w th t by gbt
 c t b for 653 page II tr d J B L ppin tr C Ph ladelph
 P 1955 P \$12

The physician is more and more being exhorted to consider the psychiatric aspects of the case in reports published in medical journals dedicated to nonpsychiatric specialties such as surgery gynecology and internal medicine. This trend reflects the growing opinion in medical circles that a patient must be viewed as an integrated socio-biologic entity rather than as simply a cluster of juxtaposed organ systems. Unfortunately these reports usually do not tell the conscientious reader desiring to mend his ways and to consider the psychiatric factors just how to go about it. The physician hears frequent reference to the facts of life but no one tells him what those facts are all about.

Sensing this need for specific information the authors of this book have sought to present the facts. By referring to appropriate chapters the general practitioner (and the specialist too) will find both theoretic fundamentals and practical and detailed plans for managing each of the whole spectrum of psychiatric conditions from the anxious patient the hypochondriac the psychosomatic problem and the functional psychotic to the neurologic disorder with psychiatric effect.

In the eagerness to further the cause of the somatic approach to mental illness the authors are often perhaps too busy criticizing the psychological approach. Early in the book is much that is pedantic and pompous. The style is platitudinous and full of generalizations. Conclusions emerge from unclear logic and scantily or vaguely supported evidence. Homilies and dogmatism are allowed to compete for attention with demonstrable facts.

Happily this enthusiasm subsides after the first few pages and a more objective discussion takes over. The reader should not trust his first impression. The therapeutic and fornic discussion in the main body of the book employ a balanced approach giving both psychological and organic techniques their just due. The authors have made remarkable progress toward accomplishing their goal.

No other bound volume I know of does quite what this book does. One can anticipate that it will be to the general practitioner what Leo Alexander's *Treatment of Mental Disorders* is to the psychiatrist—a reference and guide to the use of organic therapy to supplement and enlarge psychotherapy. It calls a sister team of psychiatrist-psychiatric social worker-psychiatric nurse and attendant and clinical psychologist in both clinic and hospital. It should inspire collaboration between the psychiatrist and other medical specialists and it will encourage the general practitioner to try to give broad-based therapy to his patients.

The subject is so extensive that in this single volume the authors must limit discussion of some of the sections to a summary or outline. Perhaps they should have only mentioned or omitted entirely some of the well known organic illnesses such as paresis which are more thoroughly treated in books specifically devoted to the subjects and thus saved space for more discussion of multiple attack on such problems as psychophysiologic diseases.

But all in all this book is clearly a significant contribution to medicine. The need for it is great; it does much to meet the need. And it shows the way further to broaden the approaches to medical diagnosis and therapy.—WILLIAM F. SHEELEY, Lt Col USAF (MC)

THE NURSERY SCHOOL, by Katherine H. Read, 2d edition, 297 pages, illustrated, W. B. Saunders Co., Philadelphia, Pa., 1955.

This refreshing book reads almost like a text on the mental health of the nursery school child. The nursery school is identified as a human relationships laboratory wherein the day's activities are used as laboratory experiences in the study of children to promote the better understanding of human beings. The word laboratory is used in the sense of growth of learning, not only on the part of the child but also of the teacher and parent. Laboratory is not intended to connote any scientific conditions of controlled study. The author acknowledges the complexities of human behavior and hesitates to propose any ready-made formulas for solving nursery school problems because "we realize that as yet we know only a little of all that we need to know about people."

Practical projects (homework) and carefully selected references are appended to each chapter. The book is punctuated with many photographic illustrations as well as selected brief case studies which contribute heavily to the vivid portrayal of the behavior of children in the nursery school laboratory.

The author fulfills her responsibility in this new edition to continue to promote our understanding of children. This is important because the kind of human beings we bring up will determine the kind of world we have. The responsibility belongs to all of us who bring up children. Miss Read writes well in an easy descriptive style which will have wide appeal to a large lay audience.

—FRANK KILLIAN, J., Lt Col USAF (MSC)

WHEN MINDS GO WRONG, by John Maurice Grimes, M.D., 246 pages, The Devin-Adair Co., New York, N.Y., 1954, Price \$3.50.

Throughout this book there is considerable animosity and indignation shown toward the American Medical Association, the psychiatric profession, private sanitariums and state hospitals and their administrators. The author belittles many of the modern methods of established psychiatric practice, condemns the manner in which patients are treated in private institutions and in state hospitals and quotes frequently

and at length accounts from patients attempting to show that the mentally ill are treated with sadistic violence that well patients are confined to these hospitals against their will and that the administrators of most state hospitals are bound by politics in their management of these facilities

A lay reader of this book with no knowledge of the true conditions in most state hospitals and private sanitariums would undoubtedly form the impression that present methods of caring for the mentally ill are not much improved from those of medieval times. This book is so colored and biased by the author's apparent conditioned bitterness toward certain medical organizations and individual state hospital administrators that it can only do more harm than good.

—GERALD W. SMITH, Capt. (MC) USN

DOCTORS PHILATELIC by Oscar Gottfried 96 pages illustrated The American Philatelic Inc. New York N. Y. 1954 P. \$5

This book is indicative of the growing interest in topical stamp collecting in general and in medical stamp collecting in particular. The author, who is the publisher of *The New York Physician*, has for quite some time edited a column in that magazine entitled "Medicine and Stamps." This publication has evolved from this column.

Medical stamps can and do include portraits of hospitals, hospitals, drug, and nursing. Also there are Red Cross and TB seals, but in this little volume of less than a hundred pages Mr. Gottfried has limited himself to stamp depicting men who in some way or other were connected with medicine. Walter Reed, obviously the Congo Witch Doctor is inevitable. George Mendel is welcome, but why such men, though great in their respective fields as George Washington and Dante Alighieri? The author gives his reasons, but this reviewer is unconvinced.

Yet, if stamps of this type were limited only to famous doctors, there would not be the great wealth and variety of medical philately as exists today. Scientists like Pasteur, who did so much for medicine, William Henry Harrison, who studied medicine for a brief time under Benjamin Rush, then winning military fame, became ninth President of the United States. Georges Clemenceau, who though a full-fledged Doctor of Medicine won fame in the field of politics. Peter the Great of Russia, who to quote the author, "While not a doctor, he is said to have operated on many of his subjects, all the while and many other foreign medical men contributed to the foundation of this particular branch of topical stamp collecting."

Collectors of medical stamps and this is an understatement, will certainly and for a long time to come be indebted to Oscar Gottfried for his book.—ROBERT WALKER DAVIS

New Books Received

Books received by the *U S Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be selected for review in a later issue

- CIBA FOUNDATION COLLOQUIA ON ENDOCRINOLOGY** Volume III *The Human Adrenal Cortex* by editors for the Ciba Foundation *G E W Wolstenholme D B E M A M B B Ch* and *Ma ga et P Cameron, M A A B L S* assisted by *Joan Etherington*. 665 pages 227 illustrations Little Brown and Co Boston Mass 1955 Price \$10
- MANAGEMENT OF DISORDERS OF THE AUTONOMIC NERVOUS SYSTEM** by *Louis T Palumbo M D* 186 pages illustrated The Year Book Publishers Inc Chicago Ill 1955 Price \$5
- HISTORY OF THE SECOND WORLD WAR** United Kingdom Medical Series Editor in-Chief *Sir Arthur S MacNalty K C B M D F R C P F R C S* **THE ROYAL AIR FORCE MEDICAL SERVICES** edited by Squadron Leader *S C Rexford Welch M A M R C S L R C P R A F* Volume I Administration. 611 pages illustrated Published by Her Majesty's Stationery Office London E C 1 1954 To be purchased from York House Kingsway London W C 2 Price 70s net (\$12 60)
- SURGERY OF THE ALIMENTARY TRACT** (Bickham-Callender) in three volumes by *Richard T Shackelford M D* assisted by *Hammond J Dugan M D* Volume I Esophagus Stomach and Duodenum Liver Gallbladder and Extrahepatic Biliary Ducts pages 1 862 Volume II Pancreas Spleen Small Intestine (Jejunum & Ileum) Peritoneum Omentum and Mesentery and Colon page 863 1 634 Volume III Anorectal Tract Excision of The Rectum Hernia of the Gastrointestinal Tract and Incisions pages 1 635 2 575 1 705 illustrations W B Saunders Co Philadelphia Pa 1955 Price \$60 for three volumes
- A TEXTBOOK OF MEDICINE** edited by *Russell L Cecil M D Sc D Robert F Loeb M D Sc D D Hon. Causa LL D* and Associate Editor *Alexander B Gutman, M D Ph D Walsh McDermott M D* and *Harold G Wolff M D* 9th edition. 1 786 pages illustrated W B Saunders Co Philadelphia Pa 1955
- THE MASK OF SANITY** An Attempt to Clarify Some Issues about the So-Called Psychopathic Personality by *Hervey Cleckley M D* 3d edition. 596 pages The C V Mosby Co St. Louis Mo 1955 Price \$9 50
- MEDICAL AND PUBLIC HEALTH LABORATORY METHODS** Successor to Fifth Edition of *Laboratory Methods of the United States Army* Edited by *James Stevens Simmons M D Ph D Dr P H S D (Hon)* and *Clon J Gentzko M D Ph D* 1 191 pages 115 illustrations and 9 plates 1 color Lea & Febiger Philadelphia Pa 1955 Price \$18 50
- THE SPINE** A Radiological Text and Atlas by *Bernard S Epstein, M D* 539 pages 721 illustrations on 331 figures Lea & Febiger Philadelphia Pa 1955 Price \$16 50

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CLINICAL BIOCHEMISTRY by Abr ham Cant ow M D d M x T ump
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Phil d lphia P 1955

GENERAL ENDOCRINOLOGY by C D H Turn Ph D 2d d t
553 p ge llustr t d W B S nd r Co Phil d lphia P 1955

INSTRUCTIONS FOR AUTHORS

The *United States Armed Forces Medical Journal* is devoted to the publication of original investigations, observations and clinical experiences of interest to personnel of the medical services of the three military departments. Contributors who are affiliated with one of the military services in a commissioned, enlisted or civilian capacity should forward manuscripts to the Surgeon General of the United States Army, Navy or Air Force, Washington 25 D C, in accordance with existing regulations. The covering letter should state that the author desires the manuscript to be given consideration for publication in this *Journal*. Other authors should send manuscripts directly to the editor. Accepted manuscripts become the property of the Armed Forces Medical Publication Agency and will not be returned.

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An original typewritten copy of each manuscript with wide margins on unruled paper size 8 by 10½ inches must be submitted. Carbon copies are not acceptable. All written matter including references must be double-spaced. Articles are accepted with the understanding that they are submitted solely to this *Journal* and that they will not be reprinted without the permission of the editor. A brief factual summary which is complete in itself should conclude each paper. The editors reserve the privilege of editorial modification. The senior author will be furnished with a proof of his article prior to publication and with a generous number of reprints without cost. Authors are responsible for the accuracy of their statements.

REFERENCES

References to published literature should be listed at the end of the article in the numerical order in which they are cited in the author's text. Care and accuracy in their preparation will expedite publication of the article. Following are correct examples of references:

Fleming A, Young M Y, Suchet J and Rowe A J E. Penicillin content of blood serum after various doses of penicillin by various routes. *Lancet* 2: 621-624, Nov 11, 1944.

Cabot R C. Pernicious and secondary anemia, chlorosis and leukemia. In Osler W (editor). *Modern Medicine*. 3d edition. Lea & Febiger, Philadelphia, Pa. 1927. Vol 5 pp 33-100.

FIGURES AND TABLES

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In this issue

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Cardiovascular Surgery

Estimating Radiologic Hazards

Errors in Anesthesia

Naval Medical Research

Psychiatric Profiling

Mechanics of Medical Meetings

SERVICE ARTICLES ☆ REVIEWS OF NEW BOOKS

CLINICOPATHOLOGIC CONFERENCE ☆ CASE REPORTS

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Associate Editors

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OTON 1955

Monthly Message

Two articles have appeared recently to which I should like to invite attention. First in the August number of *The National Geographic Magazine* there is an imaginative, thoughtful narrative about the problems which now confront us in aviation medicine as we try to penetrate further and further into space at super sonic speeds. The solution to these problems depends upon research and its adaptation into practice. It affords a complete answer to those who wonder why any research in medicine should be performed by the military and demonstrates the necessity for scientists dedicated to this most difficult type of research so that doctors may be properly trained to care for our airmen.

The second article by Air Commodore F. E. Lipscomb appeared in the British journal *Public Health* April 1955 and has to do with military hygiene.

One is encouraged when one compares the advice of Napoleon with that given by Commanders in recent years. In 1813 Napoleon urged Eugene, the Commander of his I Corps to select his campsite with care but to consult his own common sense and the natives rather than the doctors. Lord Mounbatten, Lord Wavell and General Sir Oliver Leese in particular each emphasized the imperative need for good medical intelligence and strict sanitary discipline.

And again

We must be practiced. Lord Wavell said in the use of us against us against the tactics of the enemy.

The Air Commodore describes with great clarity and lively interest the duties today of officers concerned with military hygiene, and points out the shift from the detailed work of the sanitary inspector to the health visitor and such groups to the medical officer who devotes himself more and more to organization and administration in anticipation of present and future needs. He concludes

All the problems you may say the concern of the present day they are. But tomorrow they will be our concern as everyday matters of hygiene.

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Foreword

The United States Armed Forces Medical Journal is the medium for dissemination of material demonstrating the progress of medical science and the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surge General of the Army are the principal officers responsible for the content of the Journal. The Journal is published by the Department of Defense, Office of the Assistant Secretary of Defense (Health and Medical), in cooperation with the Surge General of the Army.

FRANK B. BERRY, M.D.

Assistant Secretary of Defense (Health and Medical)

MAJOR GENERAL SILAS B. HAYS

Surge General, United States Army

REAR ADMIRAL BARTHOLOMEW W. HOGAN

Surge General, United States Navy

MAJOR GENERAL DAN C. OGLE

Surge General, United States Air Force

UNITED STATES ARMED FORCES MEDICAL JOURNAL

Volume VI

September 1955

Number 9

RESPIRATORY DISEASE RESEARCH

JOHN H DINGLE M D

IT IS INDEED an honor and a privilege to present the "James Stevens Simmons Memorial Lecture," not only because of my deep personal respect and affection for General Simmons, but also because of my interest in the field of preventive medicine to which his philosophy and leadership contributed so much during and since World War II. All of us who worked with him felt the impact of his philosophy. General Simmons believed in the importance of preventive medicine in protecting and advancing the health, welfare, and security of our nation. He believed firmly that research is the basis of advancement in preventive medicine as in the other medical sciences. Application of knowledge is essential, but new knowledge must also be sought. And he repeatedly emphasized that the military forces hold many unique advantages for intensive and long term investigation.

General Simmons implemented his philosophy in a variety of ways. One of his concepts led to the establishment of the Army Epidemiological Board and its several Commissions—the forerunner of the present Armed Forces Epidemiological Board. The work of these Commissions offers many examples of the contributions that can be made through research in the military forces. I have chosen to discuss the problem of acute respiratory infections in recruits for several reasons. It is a major problem of recruit training. The problem was defined more sharply than formerly by studies of the Commission on Acute Respiratory Diseases during the War. Work on the problem since the War has led to the isolation of at least one of the etiologic agents involved and finally an effective method for prevention and control may soon be available.

From the School of Medicine, West Reserve University, Cleveland, Ohio.
Presented at the James Stevens Simmons Memorial Lecture, West Reed Army Medical Center, 21 April 1955.

Content of the data included in this paper were derived from studies conducted under the auspices of the Commission on Acute Respiratory Diseases, Armed Forces Epidemiological Board.

Foreword

The United States Armed Forces Medal for the most meritorious
 military service of the Department of Defense. The Assistant Secretary of
 Defense (Health and Medical) and the Surgeon General of the Veterans
 Affairs Administration have jointly established the Medal for the
 National Capital and the Department of Defense. The Medal for the
 Department of Defense is a symbol of the Department of Defense's
 commitment to the highest standards of military service.

FRANK B. BERRY, M.D.

Assistant Secretary for Defense (Health and Medical)

MAJOR GENERAL SILAS B. HAYS

Surgeon General, United States Army

REAR ADMIRAL, BARTHOLOMEW W. HOGAN

Surgeon General, United States Navy

MAJOR GENERAL DAN C. OGLE

Surgeon General, United States Air Force

undergoing their first military experience. In November 1943, the rates among both recruits and seasoned men rose abruptly. This increase represented an epidemic of influenza A. As the epidemic subsided, the rate in seasoned men declined sharply to low levels, whereas the rate for recruits remained high, fluctuating with population turnover. Thus influenza behaved differently from the other respiratory diseases, and this difference provides a means of recognizing the occurrence of true influenza in a military population. In the third year, the attack rate for recruits again rose, whereas that for seasoned men remained low. These patterns of epidemiologic behavior suggested that respiratory disease in recruits differed from that in seasoned men and might constitute a distinct etiologic entity. It also seemed possible that experience with this entity might be a major factor in the "seasoning" process.

Further analysis of the behavior of respiratory disease in batteries of recruits appeared to support these concepts. The flow schedule of the training center was such that batteries were filled with recruits at regular intervals throughout the year. As a battery completed its basic training and left the post, a new battery was formed with recruits to replace it, thus providing a population inflow and outflow ideal for these studies. Figure 2 shows the behavior of respiratory diseases in four batteries during December and January of 1942-1943—a behavior which was typical during the winter months. These recruits arrived during the week of 11 December. Their hospitalization rates rose to a peak of about 140 per 1,000 per week in the third week of training and then declined rather sharply. By the end of 5 or 6 weeks there was little respiratory illness. But during that period about one third of the men had been hospitalized for respiratory illness and the period of hospitalization averaged 2 weeks. The interference with training is obvious.

The influence of season on this phenomenon was consistent during the 3 years of study. The sharpest outbreaks occurred in recruits arriving at the post during the winter months, as is illustrated in figure 3 for the period from October 1942 to January 1943. Recruits entering during the summer and early fall usually showed a delayed rise. Troops entering in the late spring would have little illness during the summer, but would experience a wave of illness in the fall. Thus the behavior was related to season but not to the stage of training or to physical conditioning.

Finally, the undifferentiated respiratory diseases differed epidemiologically from other known entities. Figure 4 shows the occurrence of undifferentiated respiratory disease, influenza A, and type 12 streptococcal infections in a battalion of 1,000 men during the period from October 1942 to February 1943. Figure 5

BATTALION 2

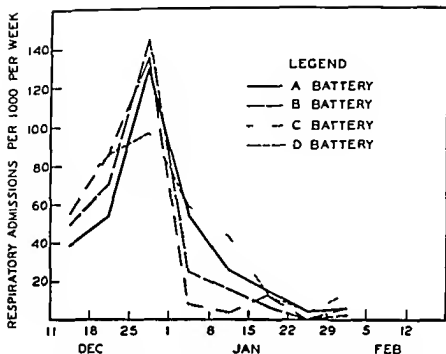


Fig 2 Admissions for respiratory diseases for four batteries of a battalion of the Replacement Training Center from 11 December 1942 to 5 February 1943

shows the occurrence of undifferentiated respiratory disease and German measles in five battalions. German measles reached its peak during the same calendar weeks, whereas the peaks of respiratory disease varied in each battalion depending on the time of its organization and arrival at the post.

Thus the epidemiologic data suggested that undifferentiated respiratory disease might be an entity that occurred in influenza-like epidemics in individual units of recruits during the winter months and did not affect seasoned men to an appreciable degree possibly because of immunity.

The clinical features of these illnesses as seen in hospitalized recruits were those of a mild respiratory infection of gradual onset. Feverishness, chilliness, and headache were the most frequent complaints. Malaise, anorexia, and symptoms of nasal involvement occurred in about half of the patients. Sore throat was common but was mild in degree. Minimal hoarseness and cough were also common, although less than half of the patients had a productive cough or chest pain. Only rarely did the patients appear to be moderately or severely ill. Physical signs were

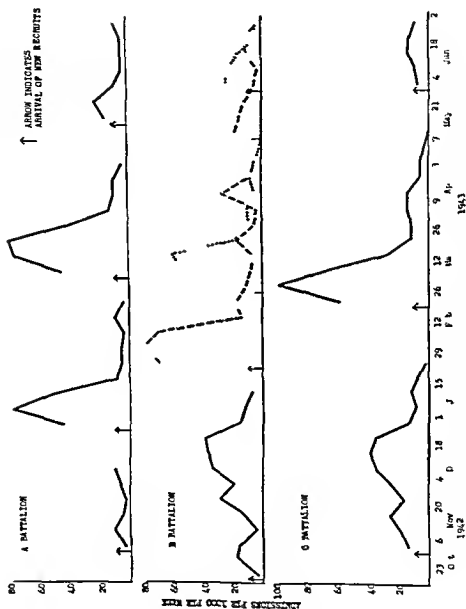


Figure 3. Admission rates for respiratory disease for three battalions of recruits in the Replacement Training Center from 23 October 1942 to 2 July 1943

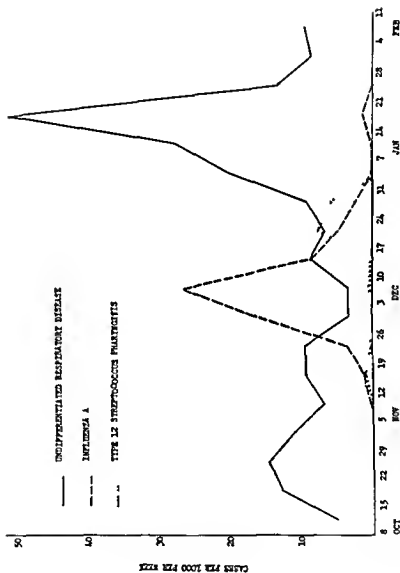


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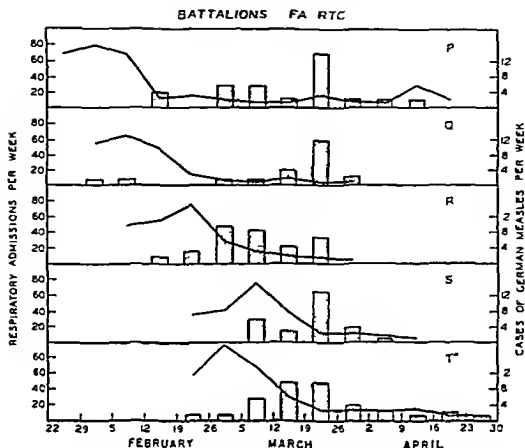


Figure 5 Admissions for respiratory disease and German measles from five battalions of the Replacement Training Center from 22 February 1943 to 30 April 1943

remarkably few rarely of intense degree and were noted in less than half of the patients. Nasal obstruction, mild injection of the pharynx and palate, and lymphoid hyperplasia on the pharyngeal wall were most frequently found. Edema of mucous membranes, cervical adenopathy, and pulmonary rales were present in about 10 to 15 percent of the patients. The febrile course was short, from 2 to 4 days and the average maximum temperature was about 101° F. Constitutional symptoms subsided with defervescence, but symptoms referable to the respiratory tract when present tended to persist from 1 to 2 weeks. Leukocyte counts were within normal limits and cultures revealed only the normal bacterial flora of the respiratory tract.^{2, 3}

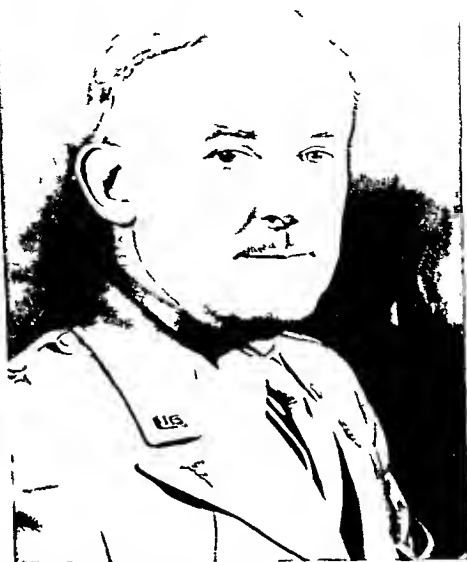
Many attempts were made to isolate an etiologic agent or to transmit this respiratory infection to animals. Known viruses such as the influenza viruses, were not responsible, as indicated by the failure to isolate them and by the lack of serologic evidence. No virus could be isolated in chick embryos nor could the infection be transmitted to experimental animals. Since a similar lack of success was attained with specimens from pa-

tients with the common cold and primary atypical pneumonia a study in volunteers was performed. Throat washings were collected from a donor who was a recruit and whose illness was typical of the recruit disease. After filtration to remove bacteria these washings were sprayed into the noses and throats of 24 men of whom 16 (75 percent) became ill. In most of the volunteers symptoms first appeared on the fifth or sixth day after inoculation. The symptomatology was somewhat variable but the initial complaints were usually those of dryness or soreness of the throat which developed gradually over a period from 24 to 48 hours. Constitutional symptoms were minimal or absent. Nasal symptoms were minimal. Coryza was absent. Physical examination revealed very mild inflammation of the palate and pharynx and lymphoid hyperplasia. No volunteer developed pulmonary infiltration either clinically or radiologically. The illnesses were mild, generally afebrile and lasted from 4 to 12 days. Laboratory studies were within normal limits. These findings differed from those obtained with inocula from donors who had the common cold or primary atypical pneumonia with respect to incubation period, symptomatology, physical signs and course of illness.

Reinoculation of six of these volunteers with washings from the same recruit donor produced no illnesses indicating probable immunity. Subsequent inoculations showed no evidence of heterologous immunity to the common cold or to primary atypical pneumonia characterized by cold hemagglutinins.

Thus it was concluded that the disease in recruits was a clinical, epidemiologic and possibly etiologic entity. The cause was presumably a virus. The disease was termed Acute Respiratory Disease or ARD. These studies confirmed and extended the knowledge with which military men have long been acquainted that respiratory disease constitutes the major illness problem in recruit training. Other studies have confirmed the essential features of this work.

Final proof of the conclusion that ARD is a distinct entity was still lacking, however, because it required the isolation of an agent that could be related etiologically to the disease. Here the problem remained until 2 years ago when Hilleman and Werner isolated by tissue culture techniques a new virus termed RI 67 from patients with a disease which occurred epidemically among recruits at Fort Leonard Wood, Mo. which resembled ARD. Complement fixation and neutralization tests demonstrated that this virus was immunologically related to the disease diagnosed as ARD and to that occurring simultaneously in a smaller number of patients who had pulmonary infiltration but did not develop cold hemagglutinins or agglutinins to streptococcus MG.



The memory of the late Brigadier General James Stevens Simmons MC USA (Ret) will be honored annually at a James Stevens Simmons Memorial Lecture the first of which was given by Dr. John H. Dinale. General Simmons was born 7 June 1890 in Newton, N.C. He received his M.D. degree from the University of Pennsylvania School of Medicine in 1915 and a doctorate in public health from Harvard University in 1939. Commissioned a first lieutenant in the Army Medical Corps in July 1916, his assignments included the presidency of the Army Medical Department Research Board in Manila and later in the Canal Zone and directorship of the Department of Preventive Medicine of the Army Medical Service Graduate School. As chief of the Preventive Medicine Service Office of the Surgeon General, he was responsible for the development of a program that greatly benefited the health and welfare of over 9,000,000 soldiers during World War II. He drew up the plans for what is now called the Armed Forces Epidemiological Board. The President of Cuba decorated him with the Carlos J. Finlay National Order of Merit in 1944 and in 1945 the U.S. Army awarded him the Distinguished Service Medal. At the time of his death, 31 July 1954, he was dean and professor at the Harvard School of Public Health.

Hilleman's results were readily confirmed in our laboratories. Moreover, it was possible to reappraise the volunteer studies of 1944 and 1945 because sera had been stored from the donors and recipients of the various inocula used in these experiments.¹⁰ Acute and convalescent sera from the donor of the ARD inoculum showed a rise in neutralizing antibodies to the RI 67 virus; those from the donors of the common cold and primary atypical pneumonia inocula did not. Examination of the pre- and post-inoculation sera of the recipients showed that 20 of the 24 volunteers who received the ARD inoculum showed a rise in neutralizing titers for the RI 67 virus (table 1). In contrast, no changes in

TABLE 1. Rise in neutralizing titer associated with the RI 67 virus in sera from volunteers who received the ARD inoculum.

Inoculum			Neutralization
Acute	primary atypical pneumonia (ARD)		20/24
Primary	typical pneumonia		0/15
Common	cold		0/35

Numbers in numerator
Denominators in denominator

titer occurred in the sera of the 15 volunteers who received the primary atypical pneumonia filtrate or in those of the 35 volunteers who received the common cold filtrates. Thus only the ARD filtrate was associated with the development of antibodies to the RI 67 virus. The correlation between the presence or absence of RI 67 antibodies in the preinoculation sera and the occurrence of ARD in the volunteers was excellent (table 2). Of the 18 volunteers who became ill after inoculation, 15 had no detectable antibody in their preinoculation sera and all showed rises in titer. Three men who became ill had antibodies before inoculation, but two of them showed increases in titer; only one person who became ill had antibodies before inoculation and failed to develop an increase in titer. In contrast, of the six men who did not become ill, five had antibodies in their preinoculation sera and two of these had increases in titer. One person had no antibodies before inoculation and remained well, but he also showed a rise in titer. Expressed another way, illnesses occurred in 15 of the 16 men who had no detectable antibodies at the time of inoculation, whereas illness failed to develop in five of the eight men who had antibodies. No relationship existed between the presence or development of antibodies to the RI 67 virus and the results of inoculation with the common cold and primary atypical pneumonia inocula.

Some information has been obtained regarding the immunologic association of the RI 67 virus to cases of ARD occurring in military installations back to 1942 (table 3). It is apparent that a large proportion of the patients from whom sera were available,

TABLE 2 *Correlation of RI-67 neutralizing antibodies in preinoculation sera of recipients with the occurrence of ARD*

Antibody preinoculation sera	Results of inoculation with ARD filtrate	
	Number ill	Number not ill
Absent	15	1
Present	3	5

at Fort Bragg in 1942 and at Sampson Air Force Base in 1953, showed rises in neutralizing antibodies to the virus. These cases at both posts occurred during the course of sharp epidemics of ARD in recruits. A lower proportion of antibody responses was found at Fort Bragg in 1944 and 1945, but many of these cases occurred during interepidemic periods or at times of low incidence.

TABLE 3 *Neutralization titrations with the RI 67 strain of ARD virus and acute and convalescent sera from patients whose illnesses were diagnosed as ARD at military installations*

Camp	Year	Antibody rise
Ft Bragg N C	1942	10/12
	1944	8/35
	1945	1/12
Warren Air Force Base Colo	1949	1/3
	1951	0/4
Sampson Air Force Base N Y	1953	13/21

Numerator = number showing antibody rise
Denominator = number tested

Only one of seven patients diagnosed as having ARD at Warren Air Force Base in 1949 and 1951 had an antibody response. The men at this post, however, had completed their basic training before arrival and could no longer be considered as recruits. More extensive surveys have been carried out by Hilleman and associates¹⁴ in 1952, 1953, and 1954. The majority of patients in recruit training centers showed antibody responses, particularly those whose illnesses occurred in the fall and winter. Little or no evi-

dence of the disease was found at two posts occupied by seasoned troops

The etiologic studies thus support the conclusion that ARD is indeed a clinical epidemiologic and etiologic entity. At least one causative agent and possibly the principal one as far as epidemic occurrence is concerned is the RI 67 virus of Hilleman and Werner. Thus far at least the new cytopathogenic agents isolated by Rowe and associates² and Huebner and co-workers from human adenoids and tonsils have not been associated with epidemics of ARD by neutralization tests. It seems probable however that viruses other than the RI 67 strain may cause ARD.

The association of ARD with recruit populations raises the interesting question of the origin of the infection. Is it a disease peculiar to military life stimulated in its occurrence by the congregation of a susceptible population of recruits or does it exist also in civilian life? It is most reasonable to believe that it exists among civilian populations. Yet in a study of civilian families in Cleveland now in its eighth year ARD has not been recognized with certainty either clinically or epidemiologically. Nor has an RI 67 strain of virus been isolated from an illness. Examination of seven different lots of gamma globulin prepared from Red Cross pooled plasma however revealed neutralizing titers of 32 to 128 for the RI 67 virus in all of them suggesting that this agent or an immunologically similar one had infected many of the donors. A serologic survey of the Family Study population in the spring of 1954 showed that a third of the adults but none of the children (who varied in age up to 17 years) had neutralizing antibodies for the virus (table 4). The sex distribution among the adults was not equal but no correlation could be found with prior military service. The results suggest that the RI 67 type of virus has not been active in this Cleveland population during the past 17 years. Huebner and associates¹¹ however have isolated some strains of the RI 67 type so that this virus presumably does exist in civilian populations. It remains to be determined whether or not epidemics of ARD due to this virus can occur apart from unusual population movements such as the induction and training process.

The final aspect of ARD to be considered is that of prevention and control. Numerous attempts have been made to control the common respiratory diseases in military populations. Several studies have been based on procedures designed to prevent or reduce contamination of the air and the air borne spread of infection such as the use of double bunks,¹ oiling of floors and blankets, ultraviolet irradiation and glycol vapors.^{7, 12} At times such procedures have appeared to reduce the incidence of respiratory diseases but the results have not been consistent.

and the degree of reduction has been too small to warrant application of these methods

TABLE 4 *The presence of neutralizing antibodies for the RI 67 strain of ARD virus in sera obtained from the members of a group of Cleveland families in the spring of 1954*

Subjects	Number tested	Antibody present	
		Number	Percent
Children	73	0	0.0
Adults	84	29	34.5
Mothers	43	7	16.3
Fathers	41	22	53.7
Total	157	29	18.5

The use of immunization appears to hold the greatest potentiality for the prevention of ARD in recruits. As already pointed out, the epidemiologic behavior of ARD suggests that relatively firm group immunity develops in a population that has experienced an outbreak—a phenomenon which is probably a major part of the "seasoning" process.¹ Immunity in the individual person was demonstrated by challenge inoculation in the volunteer studies.⁸ Moreover, susceptibility or resistance to clinical infection was correlated directly with the absence or presence, respectively, of circulating neutralizing antibodies for the RI 67 strain of virus, and such antibodies developed during convalescence.¹⁰ The RI 67 strain of virus, at least, appears to be a good antigen. On theoretical grounds, therefore, active immunization should be effective. Work on the production and evaluation of a vaccine is now in progress in several laboratories.

Consideration should also be given to the use of passive immunization for the prevention of ARD in recruits during winter months. At that time of year inductees may arrive at training centers with respiratory disease rates already elevated and may experience an epidemic during the next 2 to 3 weeks.¹ Thus sufficient time might not be available for active immunization to be effective. As already mentioned, several lots of human gamma globulin have been shown to contain high titers of neutralizing antibodies for the RI 67 strain of ARD virus.¹⁰ It is possible that selective passive immunization of recruits with gamma globulin could prevent or greatly modify the epidemic occurrence of ARD. It is hoped that this procedure can be evaluated in the near future.

In conclusion, it now appears probable that at least a partial solution to the problem of ARD in recruits may well be at hand.

The accomplishment of this goal will indeed represent a tribute to the vision and leadership of General Simmons

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EXPERIENCES IN CARDIOVASCULAR SURGERY

II Mitral Stenosis Atrial Septal Defect Miscellaneous*

WELDON J WALKER *Lieutenant Colonel MC USA*

WARNER F BOWERS *Colonel MC USA*

HENRY C HARRELL *Colonel MC USA*

CLESTON W GILPATRICK *Major MC USA*

JOHN E COLES *Captain USAF (MC)*

RICHARD F BARQUIST *Captain, MC USA*

GARTH B DETTINGER *Captain USAF (MC)*

DONALD FAHY *Major MC USA*

THEODORE H NICHOLAS *Major MC USA*

RALPH H FORRESTER *Major MC USA*

A MITRAL STENOSIS

RHEUMATIC heart disease results from an altered antibody response to infection by group A beta hemolytic streptococci and in the chronic form involves primarily the mitral and aortic valves. In the past all forms of rheumatic heart disease accounted for about three percent of deaths from heart disease, a figure approximating the total number of deaths from all forms of congenital heart disease. The incidence of rheumatic heart disease is declining. It is now about half what it was 20 years ago, and with better treatment and prevention of streptococcal infections one can confidently predict an even greater decline in the next 20 years.

Mitral stenosis is from two to three times as common in women as in men. Pathologic physiologic findings in this condition are illustrated in fig. 6. The normal mitral valve area is from four to six square centimeters. It is in direct communication with the pulmonary capillaries via the pulmonary veins, without the benefit of intervening valves or baffles. As the mitral valve contracts, certain compensatory mechanisms must take place if the cardiac output is to be maintained through this narrowed opening. The first compensation is a rise in pressure in the left atrium and pulmonary capillaries. Another is a decrease in the cardiac output, with the tissues extracting a greater portion of the oxygen from the circulating blood. These means of compensation are limited however, because the pressure cannot rise much above

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30 mm Hg lest it exceed the osmotic pressure of the serum proteins with resulting pulmonary edema. The early symptoms of tight mitral stenosis are exertional dyspnea, orthopnea, hemoptysis, attacks of acute pulmonary edema without a grossly enlarged heart, venous distention, and hepatomegaly or other

DIAGRAM OF PATHOLOGIC PHYSIOLOGY OF MITRAL STENOSIS

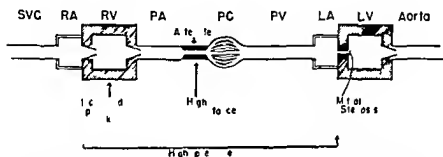


Figure 6 Pathologic physiology finding indicates no is (R produced with permission of Dr. L. Pathologic physiology of mitral stenosis and its surgical implications. Bull Nw York Acad Med 28:90-105 Feb 1952.)

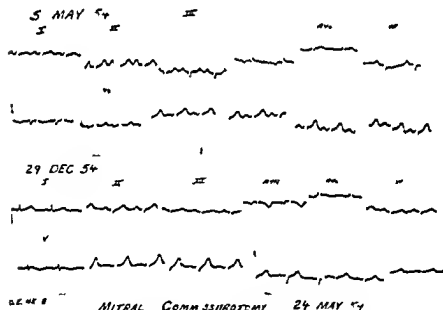


Fig. 7. Electrocardiogram before and after mitral annuloplasty. ECG shows right ventricular hypertrophy and ST-T changes. The changes are listed in the table.

evidence of right heart failure. When the mitral valve area decreases to about 1 sq cm in area, a third compensation appears, namely, narrowing of the arterioles and small arteries in the lung with proliferation of the intima and hypertrophy of the media of these vessels. This increased pulmonary resistance prevents the right ventricle from pumping an increased amount of blood into the lungs on exertion and, although respiratory symptoms may improve, there is a low, fixed cardiac output characterized by weakness, exhaustion, fatigue, enlargement of the right heart and pulmonary artery, eventual peripheral venous engorgement, hepatomegaly, and edema. These pulmonary vascular changes seem to be at least partially reversible if mitral stenosis is corrected.

The most reliable, and incidentally the most economical, method of diagnosing mitral stenosis is by recognizing the characteristic low pitched diastolic rumble, like distant thunder, at the apex. Contrary to its description in most texts it nearly always has an early diastolic component which if present establishes the diagnosis. If one imagines the second heart sound as caused by a stick striking a drum it will sound as though the stick is loose and is continuing to vibrate, thus producing a low pitched rumble. In addition, the apical first sound is accentuated and if there is sinus rhythm, is preceded by a crescendo presystolic rumble. However, one needs the early diastolic rumble to make the diagnosis from auscultation alone because a split first heart sound can simulate a crescendo presystolic murmur. The early diastolic murmur of mitral stenosis does not have the high pitched blowing character of other cardiac murmurs and many physicians even fail to recognize it as a murmur.

Figure 7 illustrates a rather characteristic electrocardiogram with evidence of right ventricular hypertrophy in a patient with a tight mitral stenosis. The electrocardiogram reverted to normal following mitral commissurotomy. Particularly noteworthy are the regression of the S wave in lead I, the decreased R wave in lead V₁, and the decrease in size of the broad prominent P waves.

Surgical intervention is recommended if the patient has significant disability from his disease and if mitral stenosis is thought to be the primary valvular defect. Age is no contraindication to operation.

ROENTGENOGRAPHIC FINDINGS

The most important roentgenographic sign of mitral stenosis is an enlarged left atrium. The same weight should be attached to this finding as to hearing the characteristic murmur. Atrial enlargement may be shown in several different ways but may be

apparent on the roentgenogram of the chest as seen in figure 8. This illustration is characteristic of the heart silhouette as seen in a typical case of mitral stenosis. The straight left border results from enlargement of the pulmonary artery. The whole pulmonary artery is enlarged but it is the left branch that causes this border of the heart to lose its concavity. A relatively small aortic knob also contributes to the apparent straight left border of the heart. The double density seen through the heart shadow on each side of the spine is caused by the enlarged left atrium. It is relatively uncommon for it to be as well demonstrated as in this case.



Figure 8 Roentgenogram of patient with mitral stenosis. The straight left border and double density are characteristic of this condition.

The left atrium enlarges in all directions and displaces the esophagus backward and to the right. Displacement of the barium-filled esophagus should be the first sign sought in the roentgenographic study of patients with a suspected lesion. Another common finding is elevation of the left main bronchus with resulting widening of the carina.

The right ventricle enlarges and eventually contributes a great deal to the overall cardiac size. The left ventricle may be smaller than normal due to the decreased cardiac output.

Angiocardiography reveals poor visualization of the left ventricle because of a "hold up" of opaque material in the left atrium. The intracardiac circulation time may be increased markedly. In one of our patients it was three and one half seconds after the left atrium filled before an appreciable amount could be shown in the small left ventricle (fig. 9).



Figure 9 Angiocardiogram in left anterior oblique view showing opacification of right ventricle, pulmonary artery and left atrium. The "hold up" of opaque material in the left atrium is demonstrated and the small left ventricle is poorly visualized. This is a characteristic angiographic finding in left mitral stenosis.

SURGICAL CONSIDERATIONS

In an anterolateral position, the left side of the chest is opened, the pericardium is incised, and two parallel incisions are made about the base of the left auricle. After the clamp has been placed and the top of the heart is exposed,

has been amputated the clamp is loosened to allow free bleeding. If no clots are present the operation can proceed. In our series we have not encountered clots in the appendage nor the chamber. When the index finger is introduced the valve orifice is felt for size, location, consistency, and regurgitation. In our experience minor regurgitation has been corrected by opening the valve so that it can function more normally. We have not encountered a jaggedly calcified valve nor, to our knowledge, has an embolus occurred in any of our patients. In each case we have employed the finger fracture method and have not used the various valvulotomes. We usually have found a fibrotic valve and have broken it open more anteriorly than posteriorly to avoid the aortic area. Equally important is the protection of the coronary artery on the ventricular surface and the prevention of rupture of the atrial or ventricular wall with the finger. Also the finger must not catch and tear the chordae tendineae which are so important in valve function. The tip of the index finger is wrapped with umbilical tape to a circumference of 7.5 cm. and then another glove is put on over this. Thus a standard finger is produced and when this is pushed through the valve we know that it has been opened to a 2.5 cm. diameter. Furthermore in fibrotic valves the obturator goes through fairly easily and causes less trauma to the heart wall. We proceed carefully making sure that progressive opening of the valve is not causing or increasing regurgitation. The working finger is kept in the valve orifice for very short periods of time. When the valve is opened we tie down the purse string suture as the finger is withdrawn and the cut edges of the appendage are closed by several interrupted sutures. We have not found carotid compression necessary nor desirable.

RESULTS

The first mitral commissurotomy was performed at this hospital on 6 September 1949. Since then 21 such operations have been performed. There are two categories of patients on whom this procedure has been carried out: (1) Pure mitral stenosis (16 cases) and (2) mitral stenosis with regurgitation (5 cases).

Of the 16 patients with pure stenosis the valve in each was 0.8 to 1.0 cm. in diameter or less before commissurotomy and was opened to .5 cm. in diameter or 1.5 cm. in circumference. Calcification was considered to have been present in two patients and the chordae tendineae were thought to be mildly involved in one. There were no operative or postoperative deaths in this series. Postoperatively, however, two patients developed complications: one having a recurrence of rheumatic activity and the other having a pericarditis and later complete subsidence of all activity. Follow up on these 16 patients ranged from three months to two years. There are six patients in whom

1 was too early for a follow-up report but they were reported to be doing well. Of the remaining 10 patients, two were taking digitalis but remained physically active seven patients reverted to complete activity and one patient did not have a follow-up because she signed out of the hospital and was reported to be working as a waitress two weeks later. Postoperatively all patients were placed on a course of penicillin given orally.

Of the five patients with mitral stenosis and regurgitation the valve in each patient admitted the finger easily although there was a fusion of the commissures to some extent in all cases. Calcium was reported to have been present in one patient, and the posterior leaflet of the mitral valve was described as absent in another. The commissures of three patients were split, with an increase in regurgitation in two of these and no change in the other. In two of the patients no anatomic change was effected. There were no operative or postoperative deaths among these five patients. Three however had recurrences of cardiac failure. In addition to this one of these three patients developed severe hepatitis and another one had pneumonia. Two of the patients had a relatively uncomplicated course. Follow-up studies again ranged from three months to two years. It was too early to report the follow-up on one of these patients the other four were all on reduced physical activity and required digitalis and other cardiac medication. It was believed that in this group of patients beneficial results had not been obtained.

In summary the patients with pure mitral stenosis were all considered to have benefited from their operation whereas no benefit was demonstrable in those with mitral stenosis and regurgitation. In the entire series there were no operative or postoperative deaths.

TABLE 2 Pre and post-operative cardiac catheterization studies in patients with mitral stenosis

Case number	Pre-operative right ventricular pressure	Post-operative right ventricular pressure	Interval between studies (months)
1	8/6 mm Hg	29/6 mm Hg	5
2	105/5 mm Hg	107/2 mm Hg	5

CATHETERIZATION DATA

Two patients with mitral stenosis had pre- and post-operative catheterization studies (table 2).

The time interval between the preoperative and postoperative studies may not have been long enough to allow for maximum

improvement. This limited experience together with the reports in the literature indicated that pulmonary hypertension is reversible following corrective cardiac surgical intervention. The improvement in the abnormal cardiac dynamics was important evidence that the good clinical results of mitral valvulotomy are in fact due to the operative procedure and are not as some have suggested the result of increased rest, better medical management and suggestion.

B ATRIAL SEPTAL DEFECT

Atrial septal defect according to Taussig is the most common congenital malformation of the heart in young adults and the one most often incorrectly diagnosed. About half the patients with this disorder have symptoms of decreased exercise tolerance from birth associated with frequent chest colds while the other half get along well until about 20 years of age at which time they often manifest pulmonary symptoms. Their average life expectancy is relatively good about 40 years which is better than for most forms of congenital heart disease but is still nearly 30 years below average. Atrial septal defect is a killer but a slow killer. The disorder occurs two or three times as frequently in women as in men. Most of these patients tend to be small and poorly nourished, perhaps due to the decreased systemic blood flow. They do not manifest clubbing and cyanosis is usually observed only as a terminal event when the right heart fails resulting in a right-to-left shunt. Frequently these patients have substernal pain on exertion which is relieved by rest but not by nitroglycerin and is probably the type of pain recently described by Viar and Harrison as due to distention of the pulmonary artery.

The usual cardiac findings are an accentuated second pulmonic sound and a systolic murmur of varying intensity in the pulmonic area about half of the patients have a thrill in this region. The murmur appears to originate in the pulmonary artery, not at the site of the atrial defect. Turbulence is caused by the marked increase in pulmonary blood flow through a dilated pulmonary artery that lies in close proximity to the anterior chest wall. Dilatation of the pulmonary ring may cause pulmonic insufficiency with a resulting high pitched diastolic murmur along the left sternal border. Occasionally an apical diastolic rumble is heard perhaps due to the large amount of blood that enters the heart during each diastolic pause.

The mechanisms involved in producing the clinical picture center around the tremendous left-to-right shunt that takes place through the defect which usually exceeds 2 cm in diameter. The mean pressure in the left atrium is normally 2 to 4 mm Hg greater than in the right. The tendency for left-to-right shunting of blood

is further enhanced by the fact that the tricuspid valve is much larger than the mitral valve. It normally will admit four fingers as against two for the mitral valve, consequently, the right ventricle fills more quickly than the left and, because of its thinner wall, is more readily distended by the pressure from within, in effect, is a common atrium. The large systolic output from the right ventricle distends the pulmonary arteries and produces the characteristic hilar dance seen on fluoroscopic examination. In spite of the large pulmonary blood flow the majority do not develop significant pulmonary hypertension until late in their disease, and in this event their prognosis becomes poorer.

Rushmer and others¹⁰ recently afforded an explanation as to why these patients often do so well in spite of the fact that the right ventricle is pumping tremendous volumes of blood. The left ventricle has the form of a concentric cylinder, which is the ideal form for a pressure pump. On the other hand the free wall of the right ventricle is draped around the convex surface of the interventricular septum like a bellows, which is an ideal arrangement for a volume pump but ineffective for a pressure pump. Rushmer and associates demonstrated that, in fact, the right ventricle normally contracts in the manner of a bellows.

Unlike other forms of congenital heart disease, atrial septal defect is only infrequently complicated by subacute bacterial endocarditis.

Short of surgical exploration a conclusive diagnosis of atrial septal defect can be made only by passing the cardiac catheter through the defect. A reasonably sure presumptive diagnosis can be made, however, by demonstrating an increased oxygen content of the blood in the right atrium as compared with samples from the vena cava, but anomalous pulmonary veins draining into the right atrium could produce the same findings.

ROENTGENOGRAPHIC FINDINGS

This is another heart lesion characterized by a marked increase in blood volume flowing through the lungs. Enormous enlargement of the pulmonary artery is characteristic of this disease. The right branch may be particularly prominent on the chest roentgenogram (fig. 10). Aneurysm at this site occurs not uncommonly. Widening of the carina may result from an enlarged pulmonary artery.

There is often a marked increase in the size of the heart which is largely contributed by dilatation of the right ventricle. The left ventricle and aorta are small by comparison.

The retrocardiac space remains clear because there is no enlargement of the left atrium. The right atrium, on the other hand, ordinarily enlarges almost as much as the right ventricle. This

is an important point in differentiating this condition from patent ductus arteriosus



Fig 10 Enlargement of the right pulmonary artery is usually a normal proportionate prominence of the right atrium and increased pulmonary vascularity are evident in this roentgenogram of a patient with a small patent ductus

Cardiac catheterization (fig 11) is particularly valuable in interatrial septal defect not only for the abnormal physiologic findings demonstrated but also for the passage of the catheter through the defect

SURGICAL CONSIDERATIONS

Our first four patients were operated on by Dr Charles P Bailor, Philadelphia, Pa, who used his doughnut procedure of suturing the anterior atrial wall to the edges of the septal defect. This procedure may interfere with blood flow from the superior vena cava but was technically successful in our patients. The remaining patients were operated on by Dr John J Kralik and one of us (WFB). At first we used the Crafoord stitch which is introduced between the superior vena cava and the aorta and passes down through the edge of the septum and its defect to emerge near the inferior vena cava. The ends of the suture are passed behind the inferior and superior cavae and when tied snugly the defect is obliterated. It is difficult to place this stitch correctly and we were reluctant to depend on

one silk suture for our repair. At about this time, Gross and Watkins¹¹ article was published and we supplemented the Cra-



Figure 11. Cardiac catheterization in a patient with interatrial septal defect. The catheter extends from the right atrium through the septal defect and left atrium and into a pulmonary vein.

ford stitch with several mattress sutures of the Gross type to support the closure. Next, we abandoned the original Craford stitch and used only the Gross stitches to bring the edge of the septal defect over to the atrial wall laterally (fig. 12). This is somewhat difficult because the tugging of the cardiac impulse tends to tear the needle through the septal edge, especially when, as in several of our patients, the septum is entirely a membranous structure. Our postoperative follow up seems to indicate that those sutures may subsequently tear through and it is our opinion that an open procedure under direct vision with a quiet heart will be the final answer to the problem. We have postponed further operations for closure of septal defects pending further developments in this technical field.

RESULTS

At this institution in the past 12 months, 11 persons have been operated on for interatrial septal defects. These were seven women, ranging in age between 21 and 35 years, two girls aged

eight and 13 years one man aged 21 years and one boy four years. In nine patients the defects were successfully closed while in the remaining two (both adult females) the operation was limited to exploratory thoracotomy. In one of these explorations was not performed because of marked bleeding tendency associated with diminished prothrombin concentration which would have made suturing of the septum very hazardous. In the second patient the anomalous drainage of the portion of the segmental veins of the right lung separately into the superior vena cava and right atrium necessitated abandonment of the procedure.

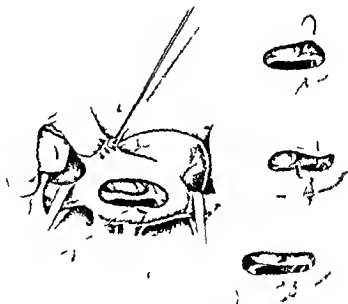


Fig. 12. Technique of closure of atrial septal defect by the Gross method.

INDICATIONS

All patients had symptoms referable to the atrial defect operatively. Four of these patients had at this time or in the past right ventricle failure. All patients presented findings of a significant left-to-right shunt with arteriolization of the lungs, atrial blood, and all had some degree of pulmonary hypertension. In two of these patients systolic pressure in the right ventricle and pulmonary artery exceeded 100 mm Hg.

FINDINGS

Of the nine patients subjected to intracardiac exploration, interatrial septal defects were found in all ranging in size from 0.5 to 4 cm while in three patients two defects were present.

All defects were of the foramen secundum type, except for the presence of a persistent ostium primum in the four year old boy. The latter case was the only one in which there was significant question regarding completeness of the closure.

COMPLICATIONS AND FOLLOW UP

There was no mortality in the series and the early complications were associated with transient cardiac irregularities, such as auriculoventricular block or atrial flutter occurring in about four of the patients. In two instances, incomplete auriculoventricular block has persisted since the operation. Three remote complications were recorded in clinic records. One patient developed subacute bacterial endocarditis three weeks postoperatively. She was treated with massive doses of antibiotics for six weeks and recovered. Follow up examinations showed satisfactory improvement, but the patient remained nervous and very heart-conscious. A second patient developed pneumonitis and pleurisy of the left lung six weeks postoperatively which might have been entirely unrelated to surgical intervention. He recovered completely and was asymptomatic and on full activity one year postoperatively. A third patient developed pericarditis with effusion two months postoperatively. This was thought to be a reactivation of tuberculous pericarditis, although this was never proved. She improved under antimicrobial therapy and is now at home under continuing therapy. Her condition does not appear to have been improved by operation.

In general, seven patients showed improvement following operation. The four year old patient who had a persistent ostium primum failed to show significant improvement postoperatively and there was doubt that complete closure of the defect had been accomplished.

ELECTROCARDIOGRAPHIC PATTERNS

It has been reported in the literature⁴ that the incidence of abnormal electrocardiographic findings is high in congenital heart disease, and that patients with atrial septal defect have a high incidence of incomplete right bundle branch block. It therefore seemed worth while to study the cases of uncomplicated atrial septal defect which have been proved by catheterization at this hospital and identify the types of electrocardiographic patterns that were present.

For the purposes of this study, electrocardiograms were classified as showing incomplete right bundle branch block provided the typical pattern was present without regard to the duration of the QRS complex. Figure 13 is a reproduction of the electrocardiogram of one of the patients of this study, illustrating the typical findings of incomplete right bundle branch block. There

is an S wave in lead I an RR' in the right precordial leads and a persistent S wave in V. In addition there is in this case a slight prolongation of the QRS to 0.10 sec

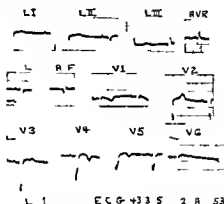


Fig 13 Electrocardiogram showing incomplete right bundle branch block pattern with a slight prolongation of the QRS

At the time of this study there were 22 patients with the diagnosis of uncomplicated atrial septal defect and findings in these cases formed the basis for the data shown in table 3

TABLE 3 Electrocardiographic findings in 22 patients with atrial septal defect

Electrocardiographic findings	Number of patients
Incomplete right bundle branch block	16
Right atrial hypertrophy	4
Complete right bundle branch block	1
Normal tracing	1
Total	22

In conclusion the electrocardiogram is a particularly valuable adjunct to the study of patients with this defect. A normal electrocardiogram casts considerable doubt on a presumptive diagnosis of atrial septal defect. On the other hand a pattern of incomplete right bundle branch block definitely supports such a clinical impression. Finally these data are in general agreement with those in the literature.

CATHETERIZATION DATA

Of the nine patients with atrial septal defect who were surgically treated at this hospital four were catheterized postoperatively (table 4)

Baker and others¹² observed that lowering of the abnormally high right ventricular and pulmonary artery pressure may continue for from 12 to 18 months. Therefore, these studies may not indicate the maximum improvement in those patients.

C OTHER CARDIOVASCULAR OPERATIONS

Tetralogy of Fallot Eight patients were operated on for varying degrees of cyanosis in an attempt to secure greater pulmonary blood flow. No patient, no matter how serious his condition, was denied operation if there seemed to be a remote chance of offering even partial relief. Two patients died. We used either the left or the right approach, anastomosing the subclavian artery to the pulmonary artery, usually end-to-side but occasionally end-to-end with a large branch. We did not perform the procedure bilaterally.

TABLE 4 *Pre and post operative cardiac catheterization findings in patients with atrial septal defect*

C numb	P re o p e r a t i v e		P o s t o p e r a t i v e		I n t e r v a l b e t w e e n s t u d i e s (i n m o n t h s)
	R i g h t v e n t r i c u l a r p r e s s u r e	S h u n t	R i g h t v e n t r i c u l a r p r e s s u r e	S h u n t	
1	25/0 mm Hg	4.5 L/min	16/2 mm Hg	None	5
2	40/0 mm Hg	4.1 L/min fl w	26/7 mm Hg	N	3
3	45/0 mm Hg	4.2 L/min	23/0 mm Hg	None	9
4	102/4 mm Hg	2.9 L/min	50/0 mm Hg	N	5

Pulmonary Stenosis In six patients, pulmonary stenosis was attacked directly by the Brock technique¹³ of incision and dilatation. No deaths occurred in this group.

Aortic Aneurysm Five patients with aortic aneurysm were operated on. Three unruptured abdominal aortic aneurysms were excised by Dr. Denton Cooley. In all three, the lesion extended to the renal vessels and a "Y" excision was used. In the first two an aortic homograft was used, and in the third a nylon cloth graft impregnated with a stiffening plastic. The results in these patients were highly gratifying.

In the other two patients, one had a huge abdominal aortic aneurysm which ruptured some hours prior to exploration. In spite of all efforts to cross clamp the aorta and replace blood loss, the patient continued to exsanguinate and died. The other patient had a thoracic aneurysm. Excision of the aneurysm with homograft replacement was followed by partial paralysis of the lower extremities from ischemia of the spinal cord. This patient died some months later after a stormy course.

TABLE 5 C d l p t ns 105 pat t s B ke Army II p t l f m 1950 to 1954

D	N mbe t P	p ra d h		La d h		T al m o t a l y		C m pl	R m a k
		N mbe	P	N mbe	P	N mbe	P		
P i n	31	0	0	0	0	0	0	1 p b 1 u r t	17 l g e d 14 d d d
M l	21	0	0	0	0	0	0	P u r 1 SBE 1 p l u r y R g u r k 2 u r t f l u r 1 h y d h 1 p m n a	16 p u r 5 g u r k
C o f	11	0	0	0	0	0	0	1 p l i y 2 b l d m l d l y 1 m a l y 1 p d 1 SBE 1 p l u r y	3 g r a f 7 u r 4 B l y 2 C r a f d 3 G
T a l p f F II p l m r y	8	2	25	0	0	2	25		
A u r y m	6 4	0 0	0 0	0 1	0 25	0 1	0 25		3 b d m n a l 1 h

TABLE 5 Cardiovascular operations on 105 patients at Brooke Army Hospital from 1950 to 1954—Continued

Diagnosis	Number of patients	Operative death		Length of stay		Total mortality		Complications	Remarks
		Number	Percentage	Number	Percentage	Number	Percentage		
Right ventricular myotomy	1	1	100			1	100		Exploratory only
Coronary artery disease	2	0	0	0	0	0	0		Pericardiotomy Pericardial ligation Coronary sinus
Transcatheter aortic valvuloplasty	2	1	50	1	50	2	100		Arrhythmias Pulmonary embolism Hemorrhage
Aortic insufficiency	2	1	50	1	50	2	100		
Subaortic stenosis	2	2	100			2	100		
Coronary artery disease	1	0	0	0	0	0	0		
Aortic sclerolysis	1	0	0	0	0	0	0		
Fistula	1	0	0	0	0	0	0		Blunt wound
Aortic aneurysm	1	1	100			1	100		
Total	105	8	7.5	3	2.8	11	10.3		

Coronary Artery Disease In two instances patients with myocardial ischemia due to coronary sclerosis were operated on and powdered asbestos was placed in the pericardial sac to stimulate adhesions with the hope that increased myocardial vascularity would result. Both of these patients were improved as evidenced by increased exercise tolerance and decreased anginal pain.

Transposition of Great Vessels Two patients were operated on for this serious disorder; one died shortly after operation, the other some months later. In both cases an interatrial septal defect was created plus a Blalock-Taussig type of subclavian pulmonary artery anastomosis in an effort to induce greater mixing of blood between the pulmonary and systemic circulations.

Aortic Insufficiency Two patients in this category were operated on for insertion of the Hufnagel valve. The first procedure went well; the patient left the hospital but died suddenly some months later. Autopsy showed a well-healed aorta with functioning valve. No cause for death could be ascertained. The other operation was an error in judgment because the patient was too ill even to sit in a wheelchair. Under refrigeration an attempt was made to introduce the valve but as the aorta was cross-clamped the tremendous heart went into arrest and resuscitation failed.

Subaortic Stenosis Two patients were operated on and were found to have this condition as a part of multiple defects. Both died; no corrective operative procedure having been attempted.

Constrictive Pericarditis In one patient a severe calcified constricting pericardium was excised successfully. This man had a very flabby myocardium and although he showed improvement after operation, he was not restored to normal. His pericardium was so thick and hard that rib shears were needed to cut it.

Vascular Ring A vascular ring in one patient which surrounded and partially obstructed the esophagus was successfully divided.

Foreign Body in the Heart A metallic fragment in the myocardium of one patient was easily removed. Recovery was complete.

Pulmonary Aortic Window In one instance a child was operated on under refrigeration with a tentative diagnosis of patent ductus or aortic window. There was no patent ductus but a large window at the origin of the aorta was found. Its diameter was greater than the hypoplastic aorta. The dissection was without event but after the clamps had been applied a tear developed into the right pulmonary artery. Although the stump was quickly divided and sutured and clamps were applied to the area of leak, fatal cardiac arrest developed.

SUMMARY AND CONCLUSIONS

Close co-operation between those working in cardiology, radiology, and surgery is essential in the workup and therapy of patients with cardiovascular lesions that are amenable to surgical correction

In the period 1950 to 1954, 105 patients in this category have been operated on at this hospital (table 5) with an operative mortality rate of 7.5 percent, a late mortality rate of 2.8 percent, and a total mortality rate of 10.3 percent, in spite of the fact that no patient has been refused operation because of the seriousness of the risk

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TREATMENT OF ULCERATIVE COLITIS

The mortality following surgical treatment of ulcerative colitis will be reduced by a more conservative surgical management by proper selection of time for operation on the part of both internist and surgeon and by proper surgical procedures. A point of particular importance is that these patients must be followed regularly for the duration of their life. It must be impressed upon them that they must report any difficulties with the function of the ileostomy and other abdominal symptoms. It is the responsibility of both the internist and surgeon to maintain an interest in patients with ulcerative colitis who have been submitted to surgical care for the remainder of their lives or the patient's life.

—RICHARD B CATTELL M D

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AN ANALYSIS OF PSYCHIATRIC CASE HISTORIES

JAMES L. FRAMO PH.D.
DUDLEY H. RIFFE L. 1st Lt (MSC) USNR

IN ORDER to describe the kinds of psychiatric patients admitted to the neuropsychiatric service of this hospital, such questions as Where do these patients come from? What are they like? What happens to them here? and Where do they go? were considered pertinent. A study of such factors not only has unlimited research potentialities but also should assist Naval Psychiatry in evaluating the effectiveness of its over all treatment program and disposition policy and perhaps its role in recruit selection. Then too the results of such a study should be of interest to the behavioral sciences as a whole (particularly in the area of admission symptomatology).

In evaluating these results for possible comparison with other populations two factors which tend to operate against each other must be kept in mind. First it must be remembered that service personnel are a selected population in that all had to meet certain minimum physical, educational and mental standards in order to be admitted into the armed services. In this sense one might safely conclude that the land and large service personnel are healthier and more educated than is a random sample of the civilian population. An argument could perhaps be made that the pre-war population would be found to suffer from different mental disorders and differ from the civilian population in vital respects. Accordingly one should be cautious in making generalizations based on the results of this study. Second this hospital is a treatment center for naval personnel on the East Coast and as such a large majority of the patients it gets are the more serious cases which could not be disposed of at the lower treatment center (aboard ships or at dispensaries and local naval hospital). In other words by the time a patient gets to this hospital he is usually at the last step of the treatment sequence and ready either for discharge or duty. Seriousness of psychiatric illness is the only criterion for admission to this hospital and there is no established naval policy governing selection of patients on any other basis (e.g. of sex, rank,

F. M. U. S. Naval Hospital, Philadelphia

Sex

Of the patients admitted 93 percent were men and 7 percent were women. The Bureau of Naval Personnel¹ reported that as of May 1954 the proportion of men to women in the entire naval service was 98.6 percent to 1.4 percent. Statistically these differences were found to be highly significant. In other words our data indicate that women in the naval military service are more likely to incur psychiatric breakdown than are men—proportionate of course to their ratio in the entire service. The implications in this finding perhaps bring into focus some questions the answers to which affect the over all efficiency of the naval service. For example does the screening process of women into the Navy need re-examination? In line with this should not the personality characteristics the motivations and expectations of women joining the Navy be more critically evaluated? Could more careful classifications and duty assignments contribute to lowering the high incidence of psychiatric illness in women? Does the factor of lowered prestige of women in the peacetime military services play a part and can public relations do anything to increase social acceptance? Further investigation of these problems certainly seems warranted.

Marital status

Of the patients admitted 66 percent were single 27 percent were married and 5 percent were separated or divorced. The U S Census Bureau reports that at the age of 23 (our average admission age) 47 percent of all men in the country in 1950 were single. In our age group consequently there tends to be a larger proportion of single men than in the general population. This result appears reasonable and suggests that younger men in the service are postponing marriage.

Race

In a distribution of patients by race 88 percent were Caucasian 10 percent were Negro and 2 percent were unclassified (Filipino Puerto Rican et cetera). According to the 1950 census the following is the proportion of races in the United States: 88.4 percent Caucasian 11.5 percent Negro and 0.1 percent other. No statistically significant differences were found in the proportion of the two major races in the patient group and the country at large.

Religion

The distribution of patients by religion was as follows: 63.5 percent Protestant 33.0 percent Catholic and 3.5 percent Jewish. One can roughly compare these figures to those obtained from

the Yearbook of American Churches³ on the national distribution 58.8 percent Protestant, 32.8 percent Catholic, 5.4 percent Jewish, and 2.9 percent other.

It should be kept in mind that the figures on the patients are based on their religion as stated on entrance into service. The national distribution is based on church membership. None of the figures gives any indication of the degree of religious adherence. In order to correctly evaluate the data on the patients, it would be necessary to know the distribution of religions throughout the entire naval service so as to determine whether or not a disproportionate number of adherents to one religion suffer breakdown; these data were not available.

Education

The average (mean) number of years of education completed was 10.7 years, although the most frequently occurring (mode) level which was reached was 12 years, or high school graduation. The 1950 census⁴ reported that the average number of years of education for the population of the United States in that year was 9.3 years. Thus, this patient population appears better educated on the average, than the general civilian population.

Rank

In this group 7 percent were officers, 25 percent were rated enlisted personnel and 68 percent were nonrated enlisted personnel.

Statistics obtained from the Bureau of Naval Personnel show the following distribution throughout the Navy and Marine Corps as of May 1954: 10 percent officers, and 90 percent enlisted men.

These differences were not found to be statistically significant and could have been due to sampling variations.

Branch of service

Of the group 74 percent were in the Navy, 21 percent in the Marine Corps, and 5 percent in the Air Force.

The Bureau of Naval Personnel statistics⁵ show the following distribution for the entire naval service: 77 percent Navy and 23 percent Marine Corps.

No statistically significant difference was found in these figures which would indicate that either Navy or Marine Corps personnel are hospitalized for psychiatric reasons in greater proportion than would be expected from their numerical ratio in the service.

Length of service

The average length of military service of patients admitted to the Neuropsychiatric Service was 25 months. Of all the patients 80 percent had less than 4 years service whereas Bureau of Naval Personnel statistics show that 65 percent of the entire naval service has less than 4 years service. This difference was not found to be statistically significant, indicating that the reason the great majority of the patients are those with short service (less than 4 years) is simply due to the fact that the Navy is largely composed of short-service personnel. Contrary to expectation those persons who have been in the naval service more than 4 years are proportionately just as likely to become psychiatric casualties as those who have been in a short time.

Family constellation

Many investigators have stressed that one of the causative factors in mental illness is faulty identification as a result of the loss of one or both parents at a crucial age. This section provides some data on this point.

At the time of their admission to the sick list 49 percent of our patient population had parents living together. Accordingly, about half of all the patients (51 percent) came from homes which were broken for one reason or another. Statistics on the national average of broken homes were not available but it is reasonable to assume that these patient figures are higher. Whether broken homes are a factor in the development of mental illness cannot of course be answered conclusively by this data. It appears to be symptomatic of all forms of social disorganization (*e g* delinquency and crime as well as mental illness). It is interesting to note that of the 49 percent who had parents living together *note was made in the records of 18 percent of considerable parental dissension.*

At an early age 15 percent of the patients lost their fathers and 10 percent lost their mothers through death. At an early age 20 percent of the patients were separated from their fathers through legal separation or divorce. Two percent were separated from the father for other reasons (*e g* desertion, commitment to a mental institution, et cetera). At an early age 6 percent of the patients were separated from their mothers through legal separation or divorce. Four percent were separated from their mothers for other reasons (*e g* commitment to a mental institution, desertion, illegitimacy).

Up to and including the age of 12 9 percent of the patients were reared by the mother alone and less than 1 percent by the

father alone, 1 percent were reared by a father and stepmother, 5 percent by a mother and stepfather, and 16 percent by other combinations (largely shifting parental figures). An interesting sidelight of this data is that, up to and including the age of 12, 13 percent of the patients were reared by women alone and less than 1 percent by men alone, of whatever combination. Consequently, this seems to lend support to previous evidence that there is, in our culture, greater opportunity for feminine identification than for masculine identification.

Twenty-two percent of the patients were the oldest child, 27 percent were the youngest child, 37 percent were in the middle, and 14 percent were only children.

Previous investigators have propounded many theories around the relationship between psychopathologic conditions and ordinal position in the family. The statistics on the national average of people who were the eldest, youngest, and only children were not taken by the Census Bureau, so there is no way of knowing how these figures compare. With reference to the category of "only children," there are some workers in the field who maintain that being an "only" child makes one more susceptible to mental illness (because of such factors as overprotection, inadequate learning of social skills, et cetera). Others maintain, however, that the problems of sibling rivalry are more difficult for children to cope with than are the problems which "only" children encounter with sibling jealousies, have to face. The data presented here does not suggest that an undue number of "only" children were admitted.

Disciplinary record

Of the patients admitted to this hospital, 26.5 percent had disciplinary charges in their record (a mention was made in the case history either of a violation occurring in the past or of one on which charges were pending).

Source of admission

Following are the immediate sources from which all of the psychiatric patients were admitted to the neuropsychiatric service.

Of the group, 72.5 percent were transferred from another hospital, the most frequent source of our admissions. Of the remaining patients, 17 percent were transferred directly from dispensaries, 5.5 percent were admitted directly to this hospital (e.g., hospital staff personnel and those brought in by military police from liberty), 2 percent were transferred directly from a ship, 1 percent were transferred from the brig, 0.5 percent were transferred directly from overseas hospital, 0.5 percent were

transferred from other hospitals to the medical service of this hospital before coming on the neuropsychiatric service 0.5 percent were transferred from a dispensary to the medical service of this hospital before coming on the neuropsychiatric service and 0.5 percent were transferred from a ship to a dispensary and then to this service

Breaking down the data in another and perhaps more meaningful way are the following categories. Thirty-eight percent of the patients became ill while on shipboard duty. It is impossible to state precisely what proportion of these patients were on overseas shipboard duty and what proportion were on stateside shipboard duty although the latter were in the great majority. At least 16 percent of the patients admitted to this service originally broke down overseas. Of these 0.5 percent were on overseas shore duty and about 7 percent were on overseas shipboard duty. (This 7 percent may be somewhat higher because we cannot determine whether any of the patients admitted from stateside ships became ill while the ships were returning from overseas.) Five percent of the patients were admitted from the brig. This figure is larger than the brig figure reported previously because the majority of these patients stopped at other installations on their way to this hospital.

Disposition

Of the patients 30 percent were discharged to their homes, 30 percent were discharged to a Veterans Administration hospital, 14 percent were sent back to duty (12 percent to full duty and 2 percent to limited duty), 15 percent were sent back to duty for completion of disciplinary action, and 7.5 percent were returned to the marine barracks. (Of this last group 3 percent were returned for discharge, 3 percent for orders and earned leave, 0.5 percent to await return to duty, and 0.5 percent for limited duty with discharge recommended.) All of the Air Force personnel (2 percent of the patient population) were returned to Air Force jurisdiction with a recommendation for discharge. (Note: The Navy does not make final disposition of Air Force personnel and can only recommend disposition.)

Treatment

The treatment given patients on this service could only be grouped in rough fashion. For example, psychotherapy could include not only systematic and intensive psychotherapeutic interviews on a regular basis but more casual contacts as well. Because of the ambiguity of the term and the lack of systematic information in the records, there is no breakdown of this category. This should not be interpreted to mean that psychotherapy was not practiced; on the contrary, there was some evidence

to indicate that quite a bit was going on. In the following categories, the treatment the patient received both prior to admission to this service and while on this service is noted. Of the patient population, 15.5 percent received electroconvulsive therapy, 2.5 percent, prior to coming here and 13 percent, here. Six percent of the patients received insulin shock therapy, less than 1 percent, prior to coming here and 5.5 percent, here. Eighty percent of the patients received nonspecific treatment.

Length of hospitalization

The average length of hospitalization for all patients on this service was 61 days. Patients on the average spent 17 days at another installation immediately prior to admission here. Consequently, the total length of hospitalization for the average patient was 84 days.

Diagnoses

Incoming and outgoing diagnoses in the major psychiatric categories are shown in table 1.

a Psychotic disorders

TABLE 1 *Incoming and outgoing diagnoses in the major psychiatric categories*

Diagnostic categories	Incoming diagnoses (percent)	Outgoing diagnoses (percent)
Psychotic	60.0	46.0
Psychoneurotic	16.5	13.5
Character disorders	9.0	36.5
Other	14.5	4.0

Of all patients admitted with a psychotic diagnosis, the following dispositions were made: 72.0 percent retained a psychotic diagnosis, in 21.5 percent the diagnosis was changed to that of character disorder, in 5.7 percent to psychoneurosis, and in 0.8 percent to psychiatric observation.

The changes in diagnosis among psychotic disorders are noted in table 2.

b Psychoneurotic disorders

Of all patients admitted with a psychoneurotic diagnosis, the following dispositions were made: 37.0 percent retained a psychoneurotic diagnosis, in 57.0 percent the diagnosis was changed to that of character disorder, and in 6.0 percent to a psychosis.

The changes in diagnosis among psychoneurotic disorders are noted in table 3.

c Character and behavior disorders

Of all patients admitted with a character and behavior disorder diagnosis the following dispositions were made 76.0 per

TABLE 2 Incoming discharge psychiatric diagnosis

Psychiatric disorder	Incoming diagnosis (percent)	Outgoing diagnosis (percent)
(Schizophrenia type)	(55.0)	(43.5)
Schizophrenia paranoid type	26.0	22.0
Schizophrenia	14.0	12.0
Schizophrenia catatonic type	6.0	4.0
Schizophrenia multiple type	5.0	4.0
Psychotic depression	4.0	1.5
Schizophrenia latent type	2.0	1.5
Schizophrenia hebephrenic type	1.5	
Alcohol psychosis	1.0	0.5
Paranoid state	0.5	0.5

Not elsewhere listed

TABLE 3 Incoming discharge psychiatric diagnosis

Psychiatric diagnosis	Incoming diagnosis (percent)	Outgoing diagnosis (percent)
Anxiety state	5.5	4.5
Nervous disorder	5.0	3.5
Constitution	2.5	2.0
Dementia	1.0	0.5
Psychogenic mental illness		
	1.0	1.5
Obsessive compulsive disorder	0.5	1.5
Psychogenic personality	0.5	
Phobia	0.5	

cent retained a character and behavior disorder diagnosis in 12.0 percent the diagnosis was changed to that of psychiatric observation in 6.0 percent to a psychosis and in 6.0 percent to a personality disorder diagnosis

The changes in diagnosis among character and behavior disorders are noted in table 4

Although only 9.0 percent of all patients were admitted with character and behavior disorder diagnoses 36.5 percent were discharged with that type of diagnosis. One possible explanation for this finding is that some of these patients essentially re-

covered from a brief, acute psychotic breakdown and exhibited the basically defective character which predisposed them to react to stress with psychopathologic symptoms (so-called "3 day schizophrenie"). Another possible explanation is that these patients were misdiagnosed as psychotic at previous installations because of an insufficient period of observation and the exigencies of the examining situation.

TABLE 4 Incoming and outgoing character and behavior disorders

Character and behavior disorders	Incoming diagnoses (percent)	Outgoing diagnoses (percent)
Emotional instability reaction	20	90
Passive aggressive reaction	15	30
Schizoid personality	15	45
Passive dependency reaction	10	80
Addiction	10	05
Paranoid personality	05	10
Immaturity with symptomatic habit reaction	05	
Inadequate personality	05	60
Alcoholism	05	
Antisocial personality		15
Aggressive reaction		15
Cyclothymic personality		05
Specific learning defect		05
Acute situational maladjustment		05

d Other

Of all patients, 14.5 percent were admitted with diagnoses other than psychiatric. They are classified as follows: 7.0 percent were admitted for psychiatric observation, 6.5 percent were admitted with miscellaneous diagnoses (primarily physical disorders), and 1.0 percent were admitted with diagnosis undetermined without a tentative diagnosis. Four percent of all patients were discharged as follows: 2.0 percent for psychiatric observation, 1.5 percent for miscellaneous reasons (usually physical disorders) and 0.5 percent for medical or surgical observation.

Symptoms

Table 5 presents a fairly exhaustive inventory of the symptoms that patients tend to have when they are hospitalized for psychiatric reasons. The figures in the columns refer to the percentage of patients who had any particular symptom, obviously, each patient had more than one symptom. A comparison is made between the frequency of symptoms on admission to the sick list and on admission to this hospital.

TABLE 5 P tag a d d f f que cy f ympt m a p ent d up
t ladm t th kl t da t d t th hosp t l

Sym p m	N d p r usly		N ed h	
	Ord	P	P	O d
S p d d f l i n f l e d para	1	33 0	29 0	3
H l l n a t i n s	2	24 0	19 5	6
F l a t p p r p i a t f f	3	23 0	29 0	2
P p l e d f u s d m i x d p	4	22 5	15 5	7
T n s r v a x o u w r r d	5	22 0	30 0	1
f f l	6	20 0	22 5	4
W h d r a w i s l a t d f d	7	15 5	22 5	5
D p d d p d	8	15 0	9 0	13
D l u s o n				
B o d i l y o m p l a t s (h y p o c h o n d i a c a l				
m a t n a l y m p m s r v s				
m h f l d d s m a t d				
l f l o m a t h g e)	9	15 0	14 0	8
B i z a r r d e a	10	14 0	10 0	10
O o g a t z d m a g l n e h r e t	11	10 0	9 0	11
S u d l i t e m p t	12	9 5	2 0	32
H d h	13	9 0	5 5	16
D k g	14	8 0	2 5	26
R i g p o c p a	15	8 0	6 0	15
S e l f d p c a r y d e a	16	7 5	8 5	14
E m l b u r t m p e b u r s	17	7 0	1 5	35
H y p e r a t y	18	6 5	3 0	24
l p d a p t a b l	19	6 5	12 0	9
S d l d	20	6 0	3 5	22
T h l t	21	6 0	2 5	27
A l	22	5 5	5 0	17
S l p e o c p t	23	5 0	2 5	28
l m n i a	24	5 0	4 5	18
F l p e t d r b l d b y d e a o f				
h o m x u a l t y	25	4 0	2 0	33
B l a k f a t g p e l l	26	4 0	0 5	41
P y h m a t d a d (f t h m				
h y p e t e l l e y o-				
d m a t i s)	27	3 5	3 5	21
D u r b e d t e d d r u c				
m i a l l k b u	28	3 5	0 5	42
E p h h y p m a l a t e d	29	3 5	4 5	19
A p a r t c l l e y				
l y f a t i g u d	30	3 5	9 0	12
D o e (o r i a)	31	3 5	1 0	38
V b a l d f f o w h a l m p u l	32	3 5	1 0	39
S r u t t g	33	3 5	2 5	30
F l g s f l n a d q c y	34	3 0	2 5	29
M o d w g s	35	3 0	1 5	36
D e p e n a l i z a n f l g f u n r e l t y	36	2 5	2 0	34
H l p l d l i n g g	37	2 5	3 0	25
O b o	38	2 5	3 5	23
C m p l n s	39	2 5	1 5	37
F b l r y l a y b r k i g d g	40	2 5		

TABLE 5 *Percentage and order of frequency of symptoms as presented upon initial admission to the sick list and as noted at this hospital* —Continued

Symptoms	Noted previously		Noted here	
	Order	Percent	Percent	Order
Irritable hostile	41	2.0	2.5	31
Amnesia	42	2.0	0.5	43
Phobias	43	1.5	0.5	44
Passive obstruction pouting stubbornness	44	1.5	4.0	20
Flight of ideas	45	1.0		
Narcotic addiction	46	1.0	0.5	45
Homosexuality (acting out)	47	1.0	0.5	46
Feels going crazy	48	0.5		
Overeats	49	0.5		
Tics	50	0.5	1.0	40
Lying	51	0.5		
Accused of rape incest seduction	52	0.5	0.5	47
Fire setting	53	0.5		
Mutism	54	0.5	0.5	48
Enuresis	55	0.5	0.5	49
Waxy flexibility	56	0.5		

This list was based on data compiled by the Psychology Department of the Naval Hospital with the courtesy of Dr. L. Le Phillips Chief Psychologist.

SUMMARY

In this study an analysis was made of the characteristics of patients who passed through the neuropsychiatric service of a large naval hospital. A random sample of 200 case history summaries was selected from among 1,691 patients discharged in 1953 and the following data were collected: age, sex, marital status, race, religion, education, rank, branch of service, average length of service, family constellation, disciplinary record, source of admission, length of hospitalization, incoming diagnosis, change of diagnosis, and final diagnosis, disposition, type of treatment, admitting symptoms, and symptoms while on this service. Using certain relevant factors as criteria, comparisons were made between this military patient population and the civilian population of the country as a whole.

CONCLUSIONS

A study such as this, it seems to us, should be the precursor of any planned research program using human subjects in large numbers. Until the researcher knows the kind of population with which he is dealing he will be unable to plan a research program intelligently.

Collection of a series of actuarial studies like this one throughout all psychiatric installations of the military services should

bring into closer focus the characteristics of service personnel who incur psychiatric breakdown (for example our finding that women in the naval military service incur psychiatric breakdown significantly more often than is proportionate to their numbers in the service leads to a potentially fruitful area of investigation) Knowledge of these characteristics and their refinement through further research should be of assistance to those who deal with the problem of psychiatric screening Prediction of behavior is the weakest of all the functions of the behavioral sciences but more accurate information on the characteristics of psychiatric casualties might help in initially eliminating those who are likely to break down later

The main function of this hospital of course is treatment and care of the psychiatrically ill so that they can either return to duty or be returned to civilian life in the best possible state of health This research should be of assistance to psychiatric services of all military hospitals not only in planning future treatment programs but also in the selection of treatment personnel in organizing the physical plant and in other administrative decisions

Consideration of the more theoretic implications of some of our results is perhaps in order A possibly significant socio-cultural trend is reflected in the finding that a large proportion of patients who are not psychotic are discharged from this major neuropsychiatric center with character and behavior disorders In most cases the psychotic patients also are found to have prominent pathologic character traits While it is a truism that everyone has a character patently all people do not have lifelong adjustment difficulties with society Our data however suggest that these character defects these basic personality maldevelopments are more prevalent than had been heretofore believed Admittedly there are certain practical dispositional reasons which in some cases lead naval psychiatrists to establish these diagnoses, and in many civilian clinics the neurotic features may be emphasized in establishing diagnoses the question seems to revolve about the nosologic issue of diagnosing on the basis of symptoms dynamics or development Despite the fact that psychiatric textbooks devote relatively little space to these problems and expand at length on the neuroses the facts of the matter are insofar as this installation is concerned that neurotic illness in pure culture is exceedingly rare Indeed we wonder how many true neurotics of the ideally analyzable type uncontaminated by defects of character are actually seen in any private practice or outpatient clinic There are more questions raised than answered by this finding—viz are the disorders of character in our society more pervasive than they used to be? Are we simply becoming more aware of the character and

behavior disorder? Are we belatedly recognizing that the superficial symptom picture is of relatively minor importance in, say, determining the outcome of the illness? In relation to this latter question, for example, anxiety, the most frequent symptom on admission to this hospital, is exhibited or expressed by patients of all degrees and kinds of psychiatric illness, and is frequently used as a gauge of prognosis, the more elusive concept of maturity, on the other hand, may be of more crucial prognostic relevance. Part of the difficulty with this whole question is that a character disorder may have protean manifestations ranging from clinging dependency through social inadequacy to drug addiction or assaultive acting out.

The answers to these questions, of course, can only be provided by future research. The most potentially fruitful area of study, it would seem, would be isolation from the early developmental years of the variables that predispose one person toward a psychosis, another toward a neurosis, another toward a disorder of character or behavior, and another toward "normality."

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THE MAO ENGLISHMAN

There were many unimportant aspects of American Army hospital life that were strange to me the visiting Englishman. I was never able to comprehend nor could anyone inform me why it was that winter and summer all windows were half covered with blinds to exclude the sun and the light while all the artificial lighting blazed. I made occasional attempts to let in the light and the air but soon had to desist. My American friends pulled my leg about it. I was the mad Englishman who enjoyed fresh air and playing games and walking for pleasure.

—KEMBLE GREENWOOD Maj RAMC
in *Journal of Royal Army Medical Corps*
p 313 Oct 1954

PORTAL VENOGRAPHY

ROBERT L. RUDOLPH M J USAF (MC)

ATENTION has been focused on vasography in the evaluation of diseases of the liver and spleen in the past 10 years due chiefly to the advances in vascular surgery in the treatment of portal hypertension. Radiopaque media are injected into the portal circulation by various routes for roentgenographic visualization. These injections have been made into the superior mesenteric vein, splenic vein, right gastroepiploic vein, and a branch of the coronary vein. The sequelae of these procedures are minimal; however, Walker and associates reported a case in which splenic injection of diodone (brand of diethanolamine salt of 3,5 diiodo-4 pyridone-N acetic acid) at laparotomy resulted in a delayed hemorrhage requiring reoperation and splenectomy. A number of reports have appeared in recent years describing portal venography by different techniques.

In 1951 Leger and associates¹ working in Paris produced one of the first portal venograms by percutaneous splenic injection. This work, along with that of Abeatici and Campi,² who injected joduron (an organic iodine contrast medium) into the spleens of dogs, stimulated widespread interest in the procedure, and subsequently several reports on the subject have appeared in the English literature.

Percutaneous splenic portal venography was performed on 15 patients with a variety of clinical entities; operative portal venograms were made of 4 additional patients. Some of these experiences will be considered in detail.

ANATOMY

A precise understanding of the anatomy of the extrahepatic portal circulation is necessary for the proper evaluation of portal venograms. The arrangement most commonly found by Douglass and associates³ in their study of 92 autopsy specimens is reproduced in figure 1.

From C. H. P. (Akron, Ohio) and R. L. P. (now in U. S. A. F. H. P. L. S. L. F. D. G. A. F. Ba. Ma. h. Spl. p. ture. b. wa. w. pro. dur. V. d. l. p. bably did th. f. pl. ni. pun. tur. la. th. th. ce. rary. f. th. di. gn. f. typh. d. f. Th. pr. edure wa. d. pted. wid. ly. Europ. d. A. f. b. d. gn. is. f. tr. p. l. p. ra. f. tions. d. Gauch. d. Th. h. b. only. porad. po. ts. f. ts. in. h. U. ted. Stat.

Another anatomic factor to be recalled is the natural communications existing between the portal and caval venous systems. Under normal conditions these anastomoses seldom function and each system is physiologically separate. These communications are of great importance in certain pathologic conditions, which result in hypertension in either the portal or caval system. The direction of the venous blood may reverse with flow from one system to the other, with subsequent dilatation of the communication as exemplified in the Cruveilhier Baumgarten syndrome.

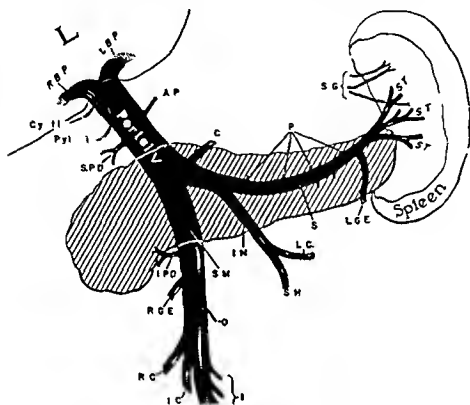


Figure 1 The extrahepatic portal system of veins, anterior aspect.

- | | |
|-------------------------------|--------------------------------|
| A P = accessory pancreatic v | P = pancreatic veins |
| C = coronary vein | Pyl = pyloric vein |
| Cy = cystic vein | R B P = right branch of |
| I = intestinal veins | portal vein |
| I C = ileocolic vein | R C = right colic vein |
| I M = inferior mesenteric v | R G E = right gastroepiploic |
| I P D = inferior pancreatico- | vein |
| duodenal vein | S = splenic vein |
| L = liver | S G = short gastric veins |
| L B P = left branch of portal | S H = superior hemorrhoidal v |
| vein | S M = superior mesenteric vein |
| L C = left colic vein | S P D = superior pancreatico- |
| L G E = left gastroepiploic v | duodenal vein |
| O = omental vein | S T = splenic trunks |

(Reproduced with permission from Douglas B E Baggenstos A H and Hollnsh d, W H Variations in portal system of veins *Proc Staff M et, Mayo Clin* 25 26-31 Jan 18 1950)

PHYSIOLOGIC CONSIDERATIONS

Some interesting observations are made by portal venography concerning portal and splenic physiology. The theory of bilaterality of or streamline portal blood flow was advocated by Copher and Dick and Hahn and associates¹ who postulated that blood from the spleen, stomach and greater part of the colon goes to the left lobe of the liver whereas blood from the duodenum, head of the pancreas and small intestine is returned to the right lobe of the liver. This is not substantiated by the roentgenographic findings following portal venography by splenic injection. On the contrary, there is more complete filling of the right branch of the portal vein after splenic injection (fig. 2).

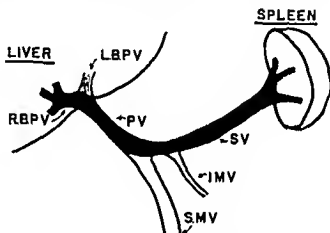


Figure 2 Distribution of the portal venous system following splenic puncture and portal venography by percutaneous splenic puncture. The diagram shows the portal vein (PV) and its branches, including the right branch of the portal vein (RBPV), the left branch of the portal vein (LBPV), the splenic vein (SV), the superior mesenteric vein (SMV), and the inferior mesenteric vein (IMV). The diagram illustrates the flow of blood from the spleen and small intestine into the portal vein and then into the liver.

The almost instantaneous emptying of the injected media from the spleen lends strong support to MacFenzie and co-workers' conception of an open splenic circulation. The contraction of the spleen from the stimulation of the needle puncture may also be a factor in the rapid emptying. The exact manner of connection of the arterioles and venules, however, remains vague.

TECHNIC OF PERCUTANEOUS SPLENIC PORTAL VENOGRAPHY

The procedure used in this series for splenic puncture and portal venography is simple. A complete blood cell count, bleeding

time, clotting time, and prothrombin time determinations, and a skin sensitivity test to the opequo medie are done. If the use of general anesthesia is contemplated, the patient is fasted and treated preoperatively with morphine and atropine. If local anesthesia is to be used, the patient receives 180 mg (3 grains) of pectobarbital sodium 1 hour before the procedure to counteract any reactions to the procaine hydrochloride and to alleviate apprehension.

The patient is placed in a supine position on a radiographic table with sandbags under the left hip and shoulder to give the body an angle of 15 to 20 degrees. A preliminary roentgenogram of the abdomen is taken to test the roentgeographic technic and, when possible, to locate the splenic shadow. The skin is washed with phisoderm and prepped with aqueous zephiren (brand of benzalkonium chloride). Aseptic precautions are taken throughout the procedure. The splenic puncture is accomplished using a 3 inch, 18 gauge spinal needle introduced in the ninth left interspace at the level of the posterior axillary line. Inserting the needle into the spleen at the end of inspiration avoids the hazard of the sudden reflex descent of the diaphragm when the needle penetrates the peritoneum, the so-called von Nagy reflex.²⁰ A characteristic rubbery type of resistance is encountered as the needle enters the spleen. Blood can usually be aspirated without difficulty. It has been impossible to control respirations satisfactorily for the necessary period of time except when general anesthesia is used. With local anesthesia, the patient is instructed to breathe as quietly as possible and avoid coughing. Extreme care is exercised not to traumatize the spleen during the excursions.

Ten to 20 ml of either 35 percent or 70 percent urokon (brand of sodium acetrizate) or diodrast (brand of iodopyracet) is introduced within 3 seconds, and a roentgenogram taken at the completion of the injection. Following the injection, the needle is quickly withdrawn and the patient returned to his room, where careful observations are made for hemorrhage. The patient remains flat in bed for at least 6 hours.

INDICATIONS

Although the full potentialities of portal venography have not yet been exploited, the procedure will undoubtedly continue to be used for the preoperative evaluation of patients with clinical portal hypertension by differentiating intrahepatic and extrahepatic blocks of the portal circulation. It will give the surgeon insight as to the status of the great veins of the portal system and will enable him to better plan his surgical procedure preoperatively. The patency of a previous portacaval anastomosis can be conclusively demonstrated. Portal phlebography may aid in the evalu-

Case 5. A 75-year-old white man came to the hospital because of upper abdominal pain. The pain first appeared 4 months prior to admission and was severe, constant and localized in the right upper quadrant of the abdomen. Associated with the attack were chills, fever, a faint icterus, dark urine and light-colored stools. The first attack lasted 1 day but 2 similar attacks lingered for about 1 week. The patient complained only of obstipation between these attacks.

The past medical history included a cerebrovascular accident with a right hemiplegia in 1949. There was a residual spastic paralysis of the right upper extremity, recovery being otherwise complete.

There was a faint scleral icterus. The abdomen was soft and flat and the liver edge was palpable 2 cm. below the right costal margin. The direct reacting serum bilirubin was 2.2 mg. per 100 ml. and total bilirubin was 4.5 mg. per 100 ml. A cholecystogram revealed a nonfunctioning gallbladder with no evidence of radiopaque calculi. Gastrointestinal roentgen study was noncontributory.

Portal venography under local procaine and intravenous pentothal anesthesia was performed using 15 ml. of 35 percent diodrast for the injection (fig. 8). The portovenography course was uneventful. Six days later the patient was returned to the operating room where a cholecystectomy and choledochostomy was performed for the removal of calculi. At the time of the laparotomy there was no evidence of intraperitoneal blood as a result of the previous splenic puncture, but there were soft filmy adhesions between the diaphragm and the convex surface of the spleen.

The convalescent period was uneventful. A cholangiogram on the sixth day was normal and the patient has been asymptomatic to date. The final diagnosis was chronic purulent and ulcerative cholecystitis and cholelithiasis.

Case 6. A 78-year-old white man was admitted to the hospital with the provisional diagnosis of leukemia. For the past 6 weeks he had noticed a painful lump in the left upper abdomen. The patient complained of easy fatigability, anorexia, weakness and shortness of breath on mild exertion.

The physical findings on admission revealed submaxillary posterior axillary, cervical and axillary lymphadenopathy. The spleen was palpable in the left upper quadrant of the abdomen and was greatly enlarged. The lower edge was palpable three fingerbreadths below the right costal margin. There was shotty inguinal lymphadenopathy.

The pertinent laboratory findings were a white blood cell count of 360,000, predominantly pre-mature myelogenous cells, and marked anemia. The bleeding and clotting times were normal.

Roentgenographic studies of the bowel showed a soft tissue mass in the area of the spleen and distention of the sigmoid colon. The

patient received 4 pints of whole blood and was started on deep toentgen therapy to the spleen

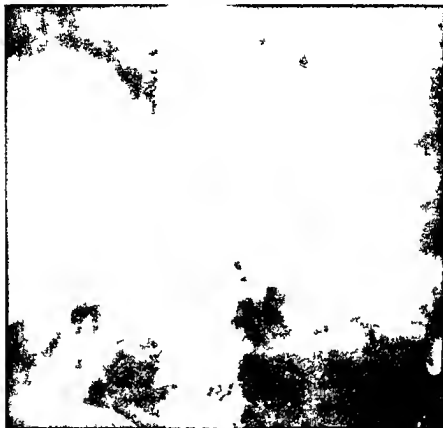


Figure 8 (case 5) Portal venogram. The nearly straight, horizontal course of the splenic and portal veins is unusual. There is no visible filling of the left branch of the portal vein. Barium remains in the colon from the barium enema given 4 days previously.

After being skin tested to diodrast, portal venography was performed using the standard method. Twenty milliliters of 70 percent diodrast was injected into the spleen. Local 1 percent procaine hydrochloride anesthesia was used in the skin and pentothal sodium was given intravenously to control respirations (fig 9). The patient returned to his room awake and with a blood pressure of 140/68 mm Hg. At that time he had no complaints.

A short time later the patient was found lying on the floor in a semiconscious state. He was immediately put to bed and an intravenous infusion of dextrose in water was started. The blood pressure at that

time was 100/50 mm. Hg the same as at the time of admission His sensorium promptly cleared About midnight the patient began complaining of abdominal pain and nausea and soon thereafter he vomited bright red blood and coffee ground material Blood studies at this time were as follows 3 million erythrocytes per cu. mm hemoglobin 49 per cent of normal platelet count 210 000 per cu. mm bleeding time 3 minutes and 25 seconds clotting time 2 minutes and 27 seconds



Figur 9 (a 6) Pathologic specimen showing the splenic vein thrombosis. The distended fibrous portal area and the left branch of the visualized thrombus. The splenic vein was the splenic vein. The splenic vein was the splenic vein.

A blood transfusion was started and a Sengstaken-Blakemore esophageal tamponade was inserted. After 3 pints of whole blood the blood count at 0800 hours the next morning was a red cell count of 3.64 million per cu. mm and a hemoglobin of 65 percent of normal. Two hours later the patient's pulse became rapid and thready and the abdomen became distended. Needle aspiration of the peritoneal cavity yielded bright red blood. The diagnosis of rupture of the splenic aneurysm was made. Before the patient could be revived the operating room he died. The red blood cell count immediately before death was 2.74 million per cu. mm.

The final pathologic diagnosis at postmortem examination was Rupture of the spleen (3 mm) with hemorrhage into the peritoneal cavity, estimated at 1500 ml esophageal varices with perforation and hemorrhage leukemic ulcerations of the stomach with hemorrhage and chronic myeloid leukemia There was a 4 cm infarcted area at the site of the needle puncture and the bleeding into the peritoneal cavity had been through a small 3 mm rent in the splenic capsule made by the needle puncture

It is believed that infarction of the spleen can be minimized by the use of 35 percent urokon or diodrast rather than the 70 percent preparation It is impossible to say what part the venography played in precipitating the hemorrhage from the esophageal varices and gastric ulcerations, but the procedure undoubtedly hastened the fatal outcome

Limitations of space preclude the detailed description of the other cases

COMMENT ON OPERATIVE PORTAL VENOGRAPHY

A factor of safety is added by performing portal venography at the time of laparotomy I have used the spleen, omental veins, and branches of the inferior mesenteric vein for injection By this technic the danger of hemorrhage is minimized because the vessel can be observed for bleeding and can be ligated if necessary This technic is preferred if exploratory laparotomy is contemplated

CONCLUSIONS

In this article the history, indications, and contraindications of portal venography are discussed The technic is described and typical venograms presented

Portal venography by percutaneous splenic injection must be considered a calculated risk The greatest hazard is hemorrhage However portal venography performed at the time of laparotomy is a safe and rewarding procedure Portal venography should not be performed on patients who have a blood dyscrasia

To lessen the danger of infarction of the spleen, percutaneous portal venography is preferably done with 35 percent urokon or diodrast rather than with the 70 percent preparations

The streamline* theory of portal blood flow does not hold true according to observations obtained by portal venograms made by percutaneous splenic injection

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Someone has said A co cl sion is the place where you
g t t d t b n k n g —Martin T Fi che

CARBON MONOXIDE ASPHYXIA

WILLIAM D. CLAUDY Major USAF (MC)

OF ALL the gases causing accidental poisoning in time of peace, the most important is carbon monoxide. To any practicing physician, a knowledge of the physiology and pathology of carbon monoxide asphyxia is imperative, if lives are to be saved. The military physician must have an even more exhaustive knowledge of the subject, for not only must he treat the victims of such poisoning but he is frequently called on for consultative advice in the fields of prevention and personnel protection. He must have knowledge of the common sources of such poisoning within the military installation in which he serves. This includes not only the common hazards of every day life, but the industrial hazards¹ present within his particular facility, the protective as well as the therapeutic requirements of military fire departments, and the particular carbon monoxide hazards inherent in specialized branches of the services.

Many physicians now entering the military service come from civilian practice where these questions are seldom encountered. Others come directly from internship or residency, where they may have had brief encounters with the treatment of patients with carbon monoxide poisoning, but have little or no knowledge of the preventive medicine aspect of the condition. Some of these physicians will serve in isolated bases, often outside of the limits of the continental United States, where this information is difficult to obtain. It is to this group in particular that this article is addressed. No attempt will be made to cover the highly specialized problems which may arise in the course of flight, marine or submarine activity, or military activities in connection with the conduct of hostilities.

CARBON MONOXIDE CHEMICAL ASPHYXIAN

Carbon monoxide is generally described as an odorless and tasteless gas, though it actually has a slight garliclike odor, which is slightly lighter than air. It is formed wherever the combustion of carbonaceous materials occurs. It falls in the class of chemical asphyxiants which also includes the cyanides.

Asphyxiants generally can be divided into two classes: simple asphyxiants (such as nitrogea, carbon dioxide, and other non

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toxic gases) and chemical asphyxiants. The latter can in turn be divided as to their site of action. Carbon monoxide causes asphyxiation by combining with the hemoglobin of the blood thus preventing the transport of oxygen from the lungs to the tissues whereas cyanide derivatives by combining with cytochrome of body cells prevent their utilization of the oxygen brought to them.

AFFINITY OF HEMOGLOBIN

The affinity of hemoglobin for carbon monoxide is from 250 to 300 times as great as it is for oxygen. Thus relatively small quantities of carbon monoxide even when present in an atmosphere which is adequate in oxygen may produce effects which may be fatal in a short time.

Carbon monoxide acts predominantly by forming a chemical combination with the hemoglobin of erythrocytes. All other immediate and remote effects of gassing are due to the resulting asphyxia. This asphyxia differs from that caused by simple suffocation because the presence of the carboxyhemoglobin radical in the blood in addition to preventing the transport of oxygen by the involved hemoglobin molecules also interferes with the dissociation of the remaining oxyhemoglobin (to oxygen and reduced hemoglobin) so that even the oxygen absorbed is less readily available to the body tissues than it would normally be. Further under normal conditions reduced hemoglobin acts as a catalyst for the liberation of carbon dioxide. If there is a decrease in the amount of available oxyhemoglobin (due to its conversion to carboxyhemoglobin) the removal of carbon dioxide may be hindered.

COMBUSTION AND SMOKE POISONING

A common asphyxial accident due to carbon monoxide is smoke poisoning from accidental building fires. The military physician may be called on to treat both building occupants and firemen. He may have to direct and supplement the activities of lay rescue squads. Hence a knowledge of the physical and chemical occurrences within burning structures is necessary.

During the combustion of ordinary everyday household materials various amounts of carbon monoxide are formed. The amounts depend on several variables. These are the amount and type of material involved in combustion, the amount of oxygen available and the temperature. Some idea of the amounts of carbon monoxide eliminated by the combustion of various substances may be gained by studying table 1. These figures represent total percentages of gases evolved and not the volume percent in a given atmosphere. Thus the smouldering burning of a small

pile of newspapers in a large open hall would give an entirely different concentration of carbon monoxide and dioxide within the atmosphere than if burning in a small enclosed basement

TABLE 1 *Percentage of carbon monoxide and carbon dioxide produced by combustion*

Material	Excess oxygen	Limited oxygen
Wood	1.9% CO 7.6% CO ₂	2.7% 5.7%
Newspapers	6.4% CO 6.6% CO ₂	41.0% (plus low temperatures 43.0% as when smouldering)
Rubber	10.1% CO 20.1% CO ₂	
Wool and silk	6.8% CO 13.4% CO ₂	17.7% CO 33.1% CO ₂

Nevertheless, the percentage of carbon monoxide to be expected during the progress of any extensive structural fire is considerable, and has been estimated as high as 6 percent.² I have secured determinations ranging from 2 to 4 percent from the smoke of building fires in the same room in which firemen were engaged in extinguishment.³

USUAL CANISTER TYPE MASK INADEQUATE

In the extensive literature on the hazards of carbon monoxide poisoning, most work deals with dangerous accumulations of far less than 1 percent. Canister type masks commonly used by fire departments are designed for atmospheres in which the carbon monoxide content does not exceed 2 percent. It would seem that the practical firemen and the engineers designing some of their protective equipment have yet to establish a common goal.

Carbon monoxide has a density of 0.967 as compared to air and is therefore slightly lighter than air. When heated, it is considerably lighter. Fire fighters are familiar with the fact that the hot gases of combustion automatically seek the highest level. I have repeatedly demonstrated by fireground measurements that concentrations in burning structures where firemen are actually working may reach dangerous levels in the areas from 6 to 12 inches below the ceiling, in stair wells and in attics and cocklofts, where no actual fire exists, and yet the atmosphere in the remainder of the building be entirely safe for unmasked men for considerable periods of time. All fireground ventilation practices are based on this principle.

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as exertion, depth of respiration, excitement, fear, pre existing anemia or other factors affecting general bodily vigor, and altitude (partial pressure of oxygen) In a series of self experiments Haldane¹⁰ showed that the effects are most marked on the central nervous system After preliminary symptoms of nausea, headache, dizziness, confusion, and abdominal pains, he passed into a condition like that of acute alcoholism in which his judgment was lost, but he was unable to realize that his mind was not as clear as ever

TABLE 3

<i>Percent of carboxyhemoglobin</i>	<i>Effects</i>
10	No appreciable effect except shortness of breath on vigorous muscular exertion
20	No appreciable effect in most instances except shortness of breath even on moderate exertion occasionally slight headache
30	Decided headache irritability easy fatigability disturbed judgment shortness of breath
40 50	Headache confusion collapse and fainting on exertion
60 70	Unconsciousness respiratory failure and death if exposure is long continued
80	Rapidly fatal
Over 80	Immediately fatal

This is a matter of considerable importance on the scene of an asphyxial accident, particularly when the casualties are multiple Unless careful observation and control of victims who have been treated for carbon monoxide asphyxia is maintained, they may insist on returning to the dangerous atmosphere to attempt the rescue of loved ones, or perhaps to secure personal valuables This applies to firemen as well as to ordinary victims of asphyxia Indeed, the compulsion and excitement may be so great that the erstwhile patient will actually struggle with his rescuers I have been struck in the face and cursed by a fireman whom I attempted to prevent returning to a fireswept building after he had partially recovered from the effects of carbon monoxide inhalation Later, he assured me that he had little recollection of his behavior which was quite out of line with his usual reasonable and agreeable character

It is also readily apparent, that if consciousness is regained when there is still a high (30 to 45 percent) concentration of carboxyhemoglobin in the blood, not only will judgment be faulty,

but strength will be impaired and it will take only a relatively minor re exposure to the gas to bring a speedy return of unconsciousness. In fire departments where morale is high firemen pride themselves on their ability to "take it" to eat smoke under tough and dangerous conditions, little realizing that their attitude will jeopardize not only their own lives, but that of their fellows who may be called on to attempt their rescue.

The anoxemia induced by carbon monoxide does not cease as soon as fresh air or oxygen is inhaled as is the case with the simple asphyxiants such as carbon dioxide but persists for a considerable period in diminishing degree until all of the gas has been eliminated from the blood. Even with the simple asphyxiants the after effects of anoxemia headache disturbed judgment, and impairment of other bodily functions persist for some time after ample oxygen is restored to the blood. This is because (1) an oxygen debt is built up in the tissues, and this equilibrium must be restored in addition to that between oxygen and hemoglobin and (2) actual pathologic changes in the tissues may occur after prolonged anoxemia. Those are principally in the brain small petechiae punctate hemorrhages and perivascular edema occur. Cellular degeneration occurs in the corpus striatum the lenticular nucleus and the globus pallidus. Though for the most part complete recovery is the rule these changes may be permanent if the gassing is severe and prolonged.

Though active treatment can shorten the period of recovery it is wise to set minimum time limits before permitting the resumption of normal activity. Generally anyone exposed sufficiently to carbon monoxide fumes to require treatment should not return to work in less than 4 to 6 hours while those who have been rendered semiconscious or unconscious even for short periods of time should rest for from 24 to 48 hours. If unconsciousness persists for more than 15 minutes after return to fresh air or the start of oxygen therapy hospitalization is indicated.

The treatment of carbon monoxide asphyxia depends on its dissociation from hemoglobin and its replacement by oxygen. This dissociation does not proceed at the same rate as does the formation of carboxyhemoglobin. Instead it proceeds gradually depends on the mass action of oxygen and is roughly proportional to the percentage of oxygen used in treatment. After brief exposures to high concentrations of the gas with rapid absorption the effects of anoxemia may be suffered largely after the victim has been removed from the contaminated atmosphere.

Because anoxemia may cause serious damage to brain and other tissues it is of extreme importance to hasten the elimination of carbon monoxide and thus shorten the period of postgassing asphyxia.

Henderson and Haggard⁴ attempted to show the importance of progressive loss of carbon dioxide in carbon monoxide poisoning and advocated the use of oxygen-carbon dioxide mixtures in the treatment of this condition, but these theories find little support today. The consensus is that pure oxygen inhalation is the treatment of choice, and that the possible minor advantages claimed for carbon dioxide mixtures are more than offset by the loss of the additional oxygen which would be available in the mixture.

ARTIFICIAL RESPIRATION

In many cases where exertion prior to gassing has been short and violent, carbon dioxide in considerable amounts may already be present in the blood stream and the addition of more carbon dioxide may actually be harmful. In any case, carbon dioxide inhalations are of value only to the already breathing patient. In the nonbreather, who is most in need of resuscitation, artificial respiration either by manual push and pull methods or by a properly operated mechanical resuscitator is required to deliver oxygen to the lungs, and this oxygen will be supplied regardless of the presence of carbon dioxide in the blood stream, the respiratory center, or the resuscitating gas. The U. S. Air Force has set 4 percent carbon dioxide as the maximum safe amount permissible in a breathable atmosphere, stating that at from 5 to 10 percent, failure of compensatory reactions and deterioration may occur,¹¹ and recommends 100 percent oxygen as the treatment of choice.

Treatment should consist of the following procedures. The victim should be removed to fresh air as speedily as possible, but care should be taken against chilling the body. If the victim is breathing spontaneously, 100 percent oxygen should be administered by closed-system inhalators. If breathing is absent or slow, artificial respiration either manual or by means of properly operated resuscitators delivering 100 percent oxygen, should be used. Manual artificial respiration should be of the push-and-pull type and should be either arm-lift back pressure (Holger-Nielsen), hip lift back pressure or Silvester method, because these methods give the greatest volume of air exchange¹² supplemented where possible by an inhalator supplying 100 percent oxygen.

After consciousness returns, the patient should be kept supine or semirecumbent and perfectly quiet, and inhalations of oxygen should be continued for variable periods. Appropriate antishock measures should be undertaken in every case.

DETERMINATIONS OF BLOOD CO LEVEL

Whenever possible the duration of oxygen therapy should be controlled by repeated determinations of the blood carbon monoxide level. An effective, rapid, convenient, and reasonably ac-

curate method for making such determinations either at the bedside or under field conditions is commercially available. It depends on quantitative color changes induced in a measured amount of tannic acid and pyrogallol when brought into contact with a measured amount of blood from a patient who has been exposed to significant amounts of carbon monoxide. The presence of carbon monoxide can be determined within 5 minutes and the approximate amount within 15 minutes.

Such determinations are of great value in following the course of and determining the duration of treatment for a carbon monoxide asphyxia victim as well as in determining whether unconsciousness is due to simple asphyxia or to carbon monoxide intoxication. When such determinations are impractical, a good rule of thumb is to give 1 hour of oxygen therapy for every 10 minutes of unconsciousness. They are also of great value in determining the part played by carbon monoxide intoxication in vehicle and aircraft accidents. In fatal accidents, determinations should be made on heart blood withdrawn as soon as possible after the accident. Valuable evidence can be obtained in this way for presentation to a coroner's jury and for various other medicolegal matters which may arise in connection with asphyxial accidents.

RESPIRATORY STIMULANTS AND BLOOD TRANSFUSIONS

The use of respiratory stimulants such as caffeine and sodium benzoate and others is of questionable value but cannot do too much harm provided their administration is delayed until oxygen therapy has been commenced. Blood transfusion is of little value. Recently exchange transfusion has been suggested in therapy of this condition. In theory it may be valuable but I have had no experience with it. The formerly advocated administration of methylene blue is definitely harmful and contraindicated. During the period of acute poisoning the blood pressure should be determined frequently and where systolic levels are low the use of levophed (brand of levarterenol bitartrate) and plasma volume expanders such as dextran are helpful.

Carbon dioxide inhalation is unnecessary and undesirable in lay hands and is contraindicated in most cases. The same respirators are often used in the treatment of drowning, electrocution and other causes of respiratory failure where carbon dioxide deficiency can play no part. Because simplicity and speed of operation in the administration of oxygen are the key to successful treatment and because at best the addition of carbon dioxide to oxygen in the treatment of victims of carbon monoxide poisoning is of minor and questionable value, 100 per cent oxygen should be the treatment of choice and should be carried out in all cases.

The old adage "Prevention is better than cure," is good advice. The use of masks where noxious atmospheres are anticipated is of great value, and the military physician may be called on to guide the selection of such masks.

THE ALL PURPOSE CANISTER MASK

The all purpose canister mask is the commonest safety device of this type, both in industry and in American fire departments. Many types of canisters are available, designed for particular asphyxiants, but only the "all purpose" canister has any place in fire fighting and rescue work. This canister contains activated carbon (to remove organic vapors), soda lime (to remove acids and carbon dioxide), copper sulfate (to protect against ammonia gas), calcium chloride (to prevent moisture from entering the canister), and hopcalite (a mixture of metallic oxides which catalyzes the combustion of carbon monoxide from the air to form carbon dioxide), plus a filter pad for smoke. It can be used as protection against smoke and gases which do not exceed 2 per cent by volume where adequate amounts of oxygen to support life remain in the contaminated atmosphere. The practical limit is said to be 17 percent oxygen in air, although life is not actually endangered until the concentration falls to 14 percent. It must be remembered, however, that such masks are generally worn when the wearer is engaging in vigorous physical effort, hence while oxygen demand is increased.

There is an inherent resistance in all such masks from breathing the air through the various deactivating chemicals. This resistance definitely increases the total effort the wearer is required to make. If concentrations in the air exceed the absorbing ability of the mask (for example, should the air contain 30 percent carbon monoxide and the mask be capable of filtering only 3 percent) disastrous results will occur. In fact, the danger may be greater than if no mask were worn, for the canister, by removing the irritating smokes and fumes which might otherwise prevent the wearer from penetrating the dangerous atmosphere, may allow him to go sufficiently far so as to impede his own rescue if collapse occurs. Also important is the fact that hopcalite and other constituents of the all purpose canister may be inactivated if they become wet or moist. In addition, the mask is subject to the usual effects of age and deterioration of the rubber tubes and facepieces. The mask has a timer, indicating the remaining life of the canister, which should be carefully watched by the wearer. When the timer indicates that the canister is two thirds exhausted the wearer should leave the contaminated atmosphere and obtain a new canister. The canister mask, then, has many limitations which may render it dangerous particularly in inexperienced hands. Its main "virtue" is its relatively low cost. It should be strongly emphasized that military

gas masks designed for protection against chemical warfare agents *do not protect against any concentration of carbon monoxide* and should *never* be used for this purpose

SELF CONTAINED MASKS

Self contained masks are entirely independent of the atmosphere in which the wearer works. They are of several types. The hose mask and air pump is the simplest, but for various reasons has failed to find much favor. Another type of self contained mask which found considerable use in the past but is gradually being replaced today, is an apparatus in which a soda lime container removes the carbon dioxide from the used air and the remaining oxygen augmented by a fresh supply is circulated back to the wearer through a bellows. This apparatus while independent of the outside atmosphere and not having the restricting features of a hose mask is complicated and cumbersome. It requires unremitting vigilance to keep it safe and still provides some resistance to breathing. Its chief asset is the relatively long (1 hour) period which it can be used without replenishment.

A self generating oxygen canister which is likewise independent of the outside atmosphere has been developed. Moisture in the breath activates certain chemicals within a canister which evolves breathable oxygen. This is circulated to the wearer by means of a bellows arrangement. This mask provides the longest period of wearability. Its disadvantages are that the canisters are relatively expensive, may react violently if immersed in water (as by an accidental fall by the wearer during use) and are bulky and complex to operate.

DEMAND TYPE MASK

The most popular self contained mask in use at the present time is the so-called demand type mask. This mask supplies either air or oxygen on demand to the wearer by means of a high pressure tank worn on the back or slung at the side which in turn is connected to a reducing valve and chamber. A demand valve which is opened by the wearer's inhalation, supplies unlimited amounts of pure air or oxygen to the user. Masks of this type are certainly the easiest to breathe and work in but are heavy, bulky and relatively expensive. The maximum useful period of the larger models is 30 minutes but if worn by a large man doing heavy physical work may fall considerably below this time period. Such masks should never be used solo but always in pairs—because should the user himself need rescue only another mask wearer can help him.

The question of the late effects of acute carbon monoxide poisoning is often raised in medicolegal and retirement cases.

Chronic carbon monoxide poisoning is not considered here, but the late effects of acute poisoning may be of interest to those concerned with medicolegal cases, disability, and retirement.

The majority of cases of acute carbon monoxide poisonings recover without any residual effects. If acute poisoning is severe and prolonged, however, symptoms may appear and persist. Those are symptoms which are common to any prolonged and simple asphyxia, for there is no chemical reaction of carbon monoxide with either blood or tissue. They are most prominent in relation to the tissues of the nervous system, and may include chronic headaches, personality changes, memory lapse, partial paralysis, and sensory disturbances. That these are very rare however, was demonstrated by Shillito and associates¹³ who investigated more than 21,000 cases of acute carbon monoxide intoxication in the New York City area. His figures showed that only 1 in every 500 persons so poisoned developed nervous or mental symptoms, and that for every case of psychosis from this cause, there were 2,000 cases from other causes. Drinker and Cannon¹⁴ surveyed the hospital records of 21,143 victims of acute carbon monoxide poisoning, mostly nonindustrial. They found 514 severe cases in victims who were unconscious on admission. Of these, 116 died. Permanent mental or nervous damage was shown in only 39 of the 393 survivors, and in all instances this had followed long periods of exposure and unconsciousness. The question of heart damage is sometimes raised in medicolegal cases.¹⁵ While it is undoubtedly true that the heart which harbored pre-existing disease may suffer further insult as a result of the superimposed anoxemia, the consensus is, that aside from this expected impression placed upon the heart at the time of the gassing, there persists no cardiac damage.

Henderson and Haggard⁴ established three conditions which should be met in order to justify a claim of permanent damage after severe acute carbon monoxide exposures: (1) at least a 50 percent saturation of the blood, or a concentration of carbon monoxide in the air sufficient to induce at least this degree of saturation, (2) an exposure of at least 3 hours, and (3) continuous complete unconsciousness lasting for at least 6 hours after return to fresh air. They stated that recovery is practically always complete except perhaps in situations of such severity.

In any discussion of acute carbon monoxide poisoning, such as is encountered in accidental fires, it must be borne in mind that seldom is only one gas or vapor encountered. In addition to carbon monoxide, smoke contains other toxic gases, such as carbon dioxide, ammonia, hydrogen sulfide, hydrocyanic acid, and nitrogen oxides, which even in low concentrations may induce pulmonary edema, as well as an aerial concentration of minute solid particles which are highly irritating. There is ample

evidence to show that the effect of the toxicity potential of two or more gases or vapors is more than additive

SUMMARY

The hazards of carbon monoxide poisoning are of particular interest to the military physician for it is an ubiquitous gas which may be encountered on almost any military installation. This article reviews the pathologic physiology and clinical picture of carbon monoxide asphyxia and the sources and concentrations of the gas evolved under various conditions.

In the treatment of acute carbon monoxide asphyxia it is emphasized that the inhalation of 100 percent oxygen supplemented whenever indicated by artificial respiration of the push and pull type or by properly operated and approved resuscitators is the sheet anchor of adequate therapy.

Individual protection by means of various types of masks is considered and the advantages and disadvantages of each type are presented. Because of their interest to medical officers concerned with disability and retirement the problems of late effects of acute carbon monoxide asphyxia are discussed and the principles of establishing a justifiable claim are set forth.

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SUBSTITUTES FOR AND ADJUNCTS TO ATROPINE IN NERVE GAS POISONING

J HENRY WILLS *Pb D*

NERVE GASES produce three types of functional change¹ (1) choline-like effects on the glands and smooth muscles of the gastrointestinal, genitourinary, and respiratory tracts, the circular smooth muscle of the iris, the sweat glands, and the heart, (2) nicotine like effects on skeletal muscles, ganglia, and the adrenal glands, and (3) facilitation and, with larger doses, inhibition of synaptic transmission in the central nervous system

The symptomatic treatment of nerve gas poisoning has consisted of the administration of atropine, or drugs with similar actions, to stop the choline-like and the central nervous system effects. In general such drugs have very slight, if any, effect on the nicotine-like actions. The most important of this latter group of effects, paralysis of voluntary muscles, has been combated by artificial respiration.

Through the co operation of various pharmaceutical companies, the pharmacology branch of this installation has been able to test a large group of synthetic compounds for efficacy against nerve gas poisoning in laboratory animals. The standard test animal for these studies has been the rabbit. Unanesthetized white rabbits of unselected sex are injected through a marginal ear vein with 2 mg /kg body weight of atropine sulfate or one of the test drugs. Two minutes later the animals receive through the same vein, an injection of twice the LD_{50} of nerve gas. Those drugs which save more than one half of the animals from dying with this dose of poison are then tested in the same way with four LD_{50} 's of nerve gas. The dose of nerve gas is increased by increments of two LD_{50} 's until a level is reached at which the drug saves less than one half of the group. Drug mixtures were tested in the same way.

At the present time two groups of drugs contain those synthetic compounds which seem most likely to yield satisfactory replacements for atropine. One of the groups consists of *darstine* (brand of mepiperphenidol), *diaparcol* (brand of 10 (β diethylaminoethyl)-phenothiazine hydrochloride), *monodral* (brand of penthienate

From Chemical Corps Medical Laboratories Army Chemical Center, Md

bromide) *neotropine* (brand of 2 diethylaminoethyl (2 cyclopentenyl) 2-thienylacetate hydrochloride) *pro-banthine* (brand of propantheline bromide) and *sysstral* which either are available commercially or are being considered seriously for marketing the other group consists of newer experimental drugs designated by numbers 19 9^o 318 2850 2973 and 3192 which have not yet been put on the market. In general the drugs in the latter group of compounds are more potent and somewhat more toxic than those in the former group

These two groups of compounds are comprised largely of derivatives of N diethylaminoethanol with the ester linkage being the predominating type between this moiety and the remainder of the molecule Table 1 illustrates the effectiveness of several of these compounds

TABLE 1 Potency of several compounds
 2 mg / kg d of LD
 5 t / b b t

Drug	Mortality	
	Number	Number
	deceased	tested
Atropine sulfate	6	6
Di	3	6
Morphine	2	6
Pro-banthine	4	6
N 19	1	6
N 92	2	6
No 318	2	6

The rabbit tends to exaggerate the efficacies of the synthetic compounds as compared with that of atropine probably because of the existence of a potent atropinesterase in this species to a greater extent than in most other mammals. Drugs which have been found to be highly active in the rabbit are also of comparatively high activity in the rat the cat the dog and the monkey. In the latter species however in contradistinction to the rabbit no drug has been found to be markedly more active than atropine. Although all of the compounds listed in table 1 are more effective than atropine sulfate in the rabbit none of them are more effective than atropine sulfate in any of the other animal species studied. Therefore none of them are sufficiently effective and innocuous to warrant their displacing atropine as the standard anticholinergic drug for treating nerve gas poisoning. Experimental work on the

symptomatic treatment of intoxication by nerve gases now is centered, therefore, on finding adjuncts to atropine

Compounds which increase the lifesaving effectiveness of the standard dose of atropine have been found among the following groups of drugs: anticonvulsant, adrenolytic, curarimimetic, ganglion blocking, locally anesthetic, prostigmine like, and the weakly anticholinergic with central depressant action. The following commercial [darstine, pendiomide, pentamethonium, prederol (brand of 2,2-diethyl 1,3 propanediol), pronestyl (brand of procaine amide hydrochloride), and thorazine (brand of chlorpromazine hydrochloride)] and experimental drugs (Nos 144, 227, 253, 2642, 2920, and 3258) seem to have the best combination of activity and low toxicity. Among these adjuncts, the experimental group is definitely more toxic on the whole than the commercial group, but is also more active.

The 12 compounds in these two series fall into the following types: anticonvulsant, ganglion blocking, locally anesthetic, and weakly anticholinergic with central depressant actions. Anti-epileptic drugs like *dilantin* (brand of diphenylhydantoin sodium), *dimezone*, *paradione* (brand of paramethadione), and *tridione* (brand of trimethadione), have not been found to have adjunctive value in experimental animals, although alone they are capable of preventing grand mal like electroencephalographic seizures and convulsions induced by nerve gas.⁷ Atropine also prevents these effects.⁴ Examples of the effectiveness of mixtures of adjuncts and atropine are given in table 2.

TABLE 2 Potencies of mixtures of adjuncts with 2 mg/kg of atropine sulfate against four LD₅₀s of nerve gas in rabbits

Adjunct	Dose	Mortality	
		Number died	Number tested
None	—	6	6
Pentamethonium	5 mg/kg	3	6
Pronestyl	40 mg/kg	1	6
Thorazine	4 mg/kg	1	6
No 144	125 µg/kg	1	6
No. 227	500 µg/kg	0	6
No 2642	2.5 mg/kg	0	6

It appears also that combinations of two different adjuncts with atropine can have more pronounced effects in experimental ani-

bromide) *neotropine* (brand of 2 diethylaminoethyl (2 cyclopenten 1 yl) 2-thienylacetate hydrochloride) *pro-banthine* (brand of propantheline bromide) and *systral* which either are available commercially or are being considered seriously for marketing the other group consists of newer experimental drugs designated by numbers 19 92 318 2850 2973 and 3192 which have not yet been put on the market. In general the drugs in the latter group of compounds are more potent and somewhat more toxic than those in the former group

These two groups of compounds are comprised largely of derivatives of N diethylaminoethanol with the ester linkage being the predominating type between this moiety and the remainder of the molecule Table 1 illustrates the effectiveness of several of these compounds

TABLE 1 Potency of 2 mg/kg dose of various compounds in rabbit

Drug	Mortality	
	Number of deaths	Number tested
Atropine sulfate	6	6
Diastyl	3	6
Morphine	2	6
Pro-banthine	4	6
N 19	1	6
N 92	2	6
N 318	2	6

The rabbit tends to exaggerate the efficacies of the synthetic compounds as compared with that of atropine probably because of the existence of a potent atropinesterase in this species to a greater extent than in most other mammals. Drugs which have been found to be highly active in the rabbit are also of comparatively high activity in the rat the cat the dog and the monkey. In the latter species however in contradistinction to the rabbit no drug has been found to be markedly more active than atropine. Although all of the compounds listed in table 1 are more effective than atropine sulfate in the rabbit none of them are more effective than atropine sulfate in any of the other animal species studied. Therefore none of them are sufficiently effective and innocuous to warrant their displacing atropine as the standard anticholinergic drug for treating nerve gas poisoning. Experimental work on the

REPORTING MILITARY MEDICINE

ROBERT J BENFORD *Colonel USAF (MC)*

NEVER before in the peacetime history of this nation have such great numbers of American physicians, dentists, and allied scientists engaged in the practice of their profession in so many areas in the world. Today about 3 out of every 10 officers of the medical services on duty in our military departments are serving outside of the United States. This unprecedented situation—arising from the need for professional support of our occupation troops and their families, for our far flung military missions, and for those strategic forces allied with the NATO nations—is extending the most recent advances of American medical research and practice to the four corners of the earth. It has likewise created global opportunities for personal achievement by these officers—achievement that is attained in everyday performance of duty.

Schooled in the high standards of this country, these military physicians and dentists are serving as medical ambassadors of the American system of professional education. Their influence on the health conditions in many overseas communities is inestimable, nevertheless, it is positive and far reaching. In their relation with local civilian physicians there is always an exchange of knowledge because learning never stops. The current literature of this specialty is being created today by the hundreds of American physicians in the armed services here and overseas, who are writing accounts of their professional observations and clinical achievements.

In Turkey recently a U S Army doctor aided in tracing the source of an epidemic of typhoid fever among immunized soldiers of that country. In Saudi Arabia medical officers have encountered a variety of tropical diseases that are rarely observed in this country. Reporting from a hospital ship, two Navy surgeons performed what are believed to be the first cardiac operations on native patients in Korea. An enterprising dental officer apparently has solved some of the problems involved in making dental appointments with members of a ship's crew.

Published 29 November 1954, the 61st annual meeting of Association of Military Surgeons, Washington, D. C. Chief Editor, U S Armed Forces Medical Journal, is now edited by the Office of the Assistant Secretary for Health and Medical Wing, D. C.

in tone the first issue contained an article on Training Projects for the Summer of 1922, and notes on C M T C and R O T C activities and on the organization of the Army of the United States. With the issue for October 1943 the name was changed to the *Bulletin of the U S Army Medical Department*. It was subsequently published monthly under the editorship of Major Johnson F Hammond, now associate editor of the *Journal of the American Medical Association*.



Figure 4. Major Guy B. Dittman, Jr.
 Medical Bulletin, October 1953

After study of the recommendations of the Secretary of Defense Forrestal, approval to the general plan of the Joint Staff and the Joint Staff Liaison Board to publish an Armed Forces Medical Journal was given by Mr. Louis Johnson, his successor in the position of Secretary of the military departments on 17 October 1943, and the establishment of the Armed Forces Medical Journal.

cy, and on the same date addressed a message to "the medical personnel of our Armed Forces" in which he stated

The formation of the *United States Armed Forces Medical Journal* is a result of the consolidation of the *Bulletin of the U S Army Medical Department* and of the *U S Naval Medical Bulletin* and marks another "first" in the annals of the Armed Forces of our country. It emphasizes the close unity and cooperation which have always existed among the medical personnel of the Army, Navy, and Air Force. All of us are proud of their record and their epochal achievements in the past and I am certain that in the future this medium will contain reports of accomplishments in military medicine of even greater significance to the health and welfare of the personnel of our Armed Forces and our Nation."

Under its own charter and joint regulations of the Army, Navy, and Air Force, the Armed Forces Medical Publication Agency publishes the *Journal* and its supplement, the *Medical Technicians Bulletin*, in accordance with general policies of Dr. Frank B. Berry, Assistant Secretary of Defense (Health and Medical). Its staff includes officers of the Medical Corps of the Army, Navy, and Air Force, one of whom is editor and the others associate editors. The position of editor is rotated every 2 years. The Agency's publications are printed by the U S Government Printing Office, and distribution is made by the three services in accordance with the recommendations of the Surgeons General.

The first editor of the *Journal* was a Navy officer, Captain Joseph L. Schwartz, now retired, who had been serving as editor of the *U S Naval Medical Bulletin* when it was suspended. Colonel Weyne G. Brendstadt, the last editor of the *Bulletin of the U S Army Medical Department* became the first Army editor of the *Journal* in July 1951. Also retired from the service, Colonel Brendstadt is now assistant editor of the *Journal of the American Medical Association*.

The worldwide circulation of the *U S Armed Forces Medical Journal* reached a high of nearly 40,000 copies per issue during the Korean war. For the past 3 years about 30,000 copies each month have been distributed. These figures do not include paid subscribers, who are served by the Superintendent of Documents. The *Journal* is received by all medical services officers on active duty and many reserve officers in private practice. It goes to all medical and dental school libraries in the United States and Canada and to many in South America and Europe. It also is sent to nearly 200 editors of other medical journals in exchange for their publications.

In the 60 years since 1901 in the past 5 years, the *Journal* has printed a total of 1,130, or 91 per

contwere contributed by regular and roservo officers of the medical services The remainder came from authors without military affiliations The published reports have been informative diverse and often controversial They cover professional and frequently administrative aspects of the medical sciences and include all of the clinical specialties as well as an occasional historical note

In its regular departments the *Journal* has brought its readers information and news of both military and medical interest Broad coverage is given to new books and monographs in the medical sciences—a total of 1 313 reviews by qualified specialists have been published Few monthly medical periodicals approach this average of more than 20 reviews of new books per issue Since January 1955 the *Journal* has brought its readers each month the report of a clinicopathologic conference presented in one of the larger Army Navy or Air Force hospitals

The *Journal* is a medium which enables authors to share their new professional knowledge with fellow officers and practitioners everywhere In the years to come it will continue to aid the military medical services in their mission of maintaining the health of our fighting forces

GET THAT READER—AND HOLD HIM

As a constant reader and an occasional editor I used to try conscientiously to plow through the mounds of impassible prose that reached my desk But no more I've made a decision that I suspect a good many other readers and editors will also make—if indeed they have not made it already I've decided that if the writer won't say what he has to say in an interesting clear and simple fashion I just won't read it There are too many medical articles clamoring for the attention of us doctors as this Scientific prose needn't be dismal It can be made readable—very pleasantly so—if the writer will only work at the job But he's got to make a real effort to capture the reader's attention and to hold it

—HENRY A. DAVIDSON M D

M d I E om

p 175 J 1955

THE ARMY AVIATION MEDICINE PROGRAM

SPURGEON H NEEL *Lieutenant Colonel MC USA*

THE NATIONAL Security Act of 1947, as amended in 1949, provides that, "In general the Army shall include land combat and service forces and such aviation and water transportation as may be organic therein." A series of subsequent agreements between the Secretaries of the Army and the Air Force have established that, generally, the Army may have such fixed wing aircraft (not exceeding 5,000 pounds empty weight) as it requires to perform its organic missions, and rotary wing aircraft (without weight limitations) as required for its logistic and tactical missions within the combat zone. As envisaged, Army aviation will be organic to the several existing branches of the service, and no separate "Corps of Army Aviation" will be established. Revolutionary tactical and logistical developments in recent years have necessitated a rapid expansion in Army aviation, both as to missions and the numbers and types of aircraft required.

Concurrently with this rapid expansion in Army aviation, there has been increasing emphasis on aviation medicine within the Army. The Army Medical Service has two primary fields of responsibility and interest in the Army aviation program. They are:

- 1 Technical responsibility for medical matters pertaining to the over all Army aviation program, and

- 2 Over all responsibility for all matters pertaining to the organization and utilization of Army Medical Service Aviation.

While these two basic fields of interest are closely related, emphasis in this article will be placed on the first, or technical responsibility of the Army Medical Service. The clinical aspects of forward air evacuation by Army Medical Service helicopters have been discussed in a previous article.¹

ARMY AVIATION

It is axiomatic that maximum exploitation of the full capabilities of Army aviation depends, to a considerable extent, on the proper selection and care of Army flyers. The immediate corollary is that responsible commanders, as well as individual flyers, must have sound timely medical advice. This advice should come from Army medical officers, trained in aviation medicine and possessing a realistic knowledge of Army aviation and its specific problems.

It is advantageous to examine some of the basic characteristics of Army aviation particularly those affecting the Army Medical Service. Army aviation is organic not only to the Army but also to the several branches of the service and to the major tactical units in the field. Thus Army aviators and medical problems are not concentrated in a few well defined locations but are dispersed throughout the entire combat zone. The Army Medical Service is confronted with the problem of caring for steadily increasing numbers of flying personnel widely dispersed and with a variety of missions.

The stresses of Army aviation are specific to a certain extent. Weight limitations and operational requirements preclude equipping Army aircraft with complex navigational aides and, normally, copilots are not used. Thus the Army aviator must maintain continuous surveillance over the terrain his aircraft and such instruments as are provided. Further in many cases the pilot has other concurrent responsibilities such as caring for a patient, adjusting artillery fire, observing enemy activities, et cetera. The stresses of this type of flying cannot be overly emphasized. The many missions of Army aviation and the fluidity and uncertainties of combat in forward areas require frequent flights in all sorts of weather with very little rest or inactivity between sorties.

Even between flights there is little abatement of stress. On completion of fatiguing missions Army aviators are required to live under conditions comparable to those of front line infantry troops. They are rotated to quiet areas on a basis of completion of a relatively long fixed tour. This lack of complete relaxation between missions and the presence of certain unavoidable deprivations further increase the hazards of continued flying. Efficiency Maintenance of efficiency despite these necessary undesirable factors requires an effective personnel management program which in turn should be based on sound medical advice.

ARMY AVIATION MEDICINE

Basically the Army aviation medicine program includes the following: (1) Physical examinations for proper selection of flying applicants and as a guide for their subsequent use as pilots, (2) clinical care of flying personnel considering the specific problems inherent to such personnel, (3) a care of the flyer program to preserve maximum individual and unit efficiency, (4) advice to responsible commanders and boards of officers concerning medical aspects of aviation problems, and (5) development with other responsible agencies of improved policies and procedures for use of flying personnel of aircraft and of equipment.

The best-known function of aviation medicine is the performance of initial, periodic and special physical examinations on

flying personnel Army Regulation 40-110 prescribes in detail the standards and procedures for the medical examination for flying. These standards place increased emphasis on the psychologic, visual, and hearing standards. To be completely effective, examining officers require additional training in these important and specific fields, as well as experience with Army aviation. This latter requirement is particularly important in performing the so-called ARMA (Adaptability Rating for Military Aeronautics). The over-all psychologic evaluation of the aviation candidate cannot be overly emphasized. Air Force experience indicates that this selection should be made only by officers who are thoroughly familiar with the hazards and stresses incident to flying, and their potential effect on the examinee in question. It is not reasonable to expect an officer unfamiliar with Army aviation to adequately evaluate the flying applicant.

The continued stresses of Army aviation dictate that flying personnel receive annual medical evaluations which serve as a basis for individual recommendations to pilots examined, as well as improvement of the over-all Army aviation program. Personnel involved in aircraft accidents are required to have medical evaluation prior to returning to flying duty. Aviation medical officers should recommend detailed corrective action for all latent or manifest defects noted.

Wherever feasible, it is advantageous to have aviation medical officers treat flying personnel who require either outpatient or inpatient care. Experienced aviation medical officers are familiar with problems peculiar to Army aviators, as well as the effects of certain diseases and medications on flyers. Many diseases and treatment regimens require that a pilot be removed from flying duties temporarily. The common cold, a nuisance to anyone, is a matter of much graver concern to the pilot. The use of such drugs as the antihistaminics and the barbiturates requires that pilots not fly during the period of effectiveness of the drug. The aviation medical officer should integrate his professional activities with those of the medical installation within which he functions. He should be charged with the care of nonflying as well as flying personnel and his additional training should be exploited. Aviation medicine should not be isolated from the over-all medical effort of the command.

The "care of the flyer" program is preventive medical care. The truly effective aviation medical officer not only performs their medical examinations, maintains accurate records, and treats his patients. These are the fundamentals of the "care of the flyer" program. Aviation medical officers should periodically visit air installations in the field and should fly with their charges to determine

situations and problems. The recognition of incipient diseases and physical defects permits early preventive or corrective action prior to the time a pilot becomes disabled. The time spent by the aviation medical officer in living with his pilots pays large dividends in better medicine and better flying.

Commanders and boards of officers investigating aircraft accidents should receive sound realistic medical advice and opinion. While participation by medical officers on boards of investigation borders on so-called administrative medicine, such participation is a must if corrective action is to be effective. Medical advisors to such boards should be well grounded in aviation medicine and reasonably familiar with Army aircraft and necessary administrative procedures. Aircraft accidents generate casualties and must be minimized if the noneffective rate among Army aviators is to be reduced. Effective corrective action will also improve the safety and reliability of Army aviation.

The sound future development of the still infant Army aviation program requires full effective medical participation. The individual pilot should receive full consideration in the development of policies for his training and utilization. While it is impractical to develop so-called military characteristics for Army aviators, those best suited must be selected from resources available. Army medical officers familiar with the physical and mental requirements for flying can provide technical guidance which is so essential in the development of sound policies and procedures. In the development of aircraft the pilot likewise must receive full consideration. Equipment and instruments should be designed to minimize fatigue and enhance safety and reliability. Responsible engineering agencies should have access to sound professional medical guidance.

THE AVIATION MEDICAL OFFICER

With the establishment of an autonomous Air Force, most qualified flight surgeons elected to remain with the U S Air Force. Initially the Army relied completely on the support of these highly qualified and experienced men for the care of Army aviation personnel. An occasional Army medical officer was sent to the U S Air Force School of Aviation Medicine at Randolph Air Force Base, Tex. These officers normally returned to their former duty station and assignment and did not actively participate in the practice of aviation medicine. Experiences in Korea indicated the Army Medical Service's need for an active aviation medicine program.

In late 1953 The Surgeon General sent a group of junior Army medical officers to the U S Air Force School of Aviation Medicine to attend short courses of instruction followed by brief per-

ods of orientation at the Artillery Center, Fort Sill Okla, then the site of Army aviation training. These officers were subsequently assigned to commands overseas and within the United States where they might perform duties related to the examination and care of flyers. Surgeons of major subordinate commands assigned these officers against existing vacancies and established the degree of effort to be devoted to the practice of aviation medicine.

In 1954 a revision to Special Regulations 605 105 5 Commissioned and Warrant Officers Personnel Military Occupational Specialties,* authorized the Military Occupational Specialty (MOS) number of 3160, representing the Aviation Medical Officer. These officers "provide aviation and general medical service for Army aviation pilots and ground personnel in hospitals, dispensaries, field units and other military installations." To qualify for this MOS, Army medical officers must be graduates of a course in aviation medicine and must be capable of performing the duties required. The aviation medical officer is the key to the success of the overall Army aviation medicine program. In the field, he is responsible for the medical selection and care of Army aviators. At staff level, he provides necessary advice concerning their development and utilization. His duties are prescribed in Army SR 605 105 5.

The Army aviation medical officer must be a well rounded physician with additional training and responsibilities in aviation medicine. As Army aviation is organic to the existing branches of the service, the aviation medical officer is an integral part of the Army Medical Service. His responsibilities toward nonaviation medicine enhance rather than reduce his effectiveness in the practice of Army aviation medicine.

TECHNICAL GUIDANCE

There are two primary facets to the implementation of the Army aviation medicine program. Centralized technical guidance is necessary for efficiency and standardization. An effective field organization is required for soundness and realistic support. The Army has accepted the proven soundness of Air Force medical doctrine and procedure and has adapted them to actual requirements of the Army. Department of the Army Technical Bulletin (TB Med 236) Medical Army Aviation Medicine dated 2 March 1955 contains the basic technical information required by aviation medical officers in the field.

ORGANIZATION FOR ARMY AVIATION MEDICINE

Although the MOS 3160 Aviation Medical Officer, is authorized and selected Army medical officers are being trained in aviation medicine, there is still no established organization for

their use in the field. As available aviation medical officers are being assigned against requirements from major commands. No Table of Organization and Equipment (T/O&E) or table of distribution contains this MOS and requisitions are submitted against vacancies in other Medical Corps MOSs. Surgeons of major commands are permitted considerable freedom in the assignment and use of these officers. Available information is that aviation medical officers are being used in general medical duties devoting varying periods of their time to the practice of aviation medicine. While this may reflect the existing shortage of medical officers it indicates the desirability of integrating aviation medicine with the overall medical effort of the command.

In late 1954 major commanders were requested to study the problem of assignment and utilization of aviation medical officers and to submit specific recommendations by July 1955. Based on these recommendations basic T/O&E's and tables of distribution will be evaluated with the view toward incorporating spaces for aviation medical officers. From information received to date it seems that few additional Medical Corps spaces will be required. It is more likely that aviation medical officers will be substituted for appropriate existing positions primarily Medical Officers General Duty (MOS 3100) and will be charged with the care of nonflying as well as flying personnel.

Pending completion of this evaluation aviation medical officers are being assigned as they become available. At present, the basis of assignment is: One medical officer per division (airborne, armored and infantry), one per corps and army headquarters and one per 30 pilots on an area basis. Those assigned to major command headquarters will have a dual function. They will care for assigned and attached flying personnel and will also assist the surgeon in the review of medical examinations and related administrative procedures. Experience has indicated that these medical officers can and should function in existing medical installations.

At posts located within the continental United States it is believed that aviation medicine should be included within the functions of the post surgeon. While divisional and units should have assigned aviation medical officers in connection with their readiness mission, assignment of medical officers to separate aviation units and activities is not considered the most economical use of such officers. A more equitable procedure is the identification of appropriate spaces in the medical portion of tables of distribution to ensure adequate aviation medical support on a post basis and under the supervision of the post surgeon. While aviation medical officers will require additional technical and administrative assistance, no requirement is presently fore-

seen for the establishment of a special enlisted specialty in support of the program

One overseas theater has submitted a recommendation that a cellular aviation medicine team be included in T/O&E 8 500 for aviation medicine support on an attached or area basis. This recommendation is being held in abeyance pending completion of the major study mentioned. Within the United States, required medical examinations for flying are being accomplished at medical installations which have been designated by major command surgeons and approved by The Surgeon General. Specialized equipment required is contained in the U S Air Force Flight Surgeon's kit which will probably be standardized for use within the Army in the very near future. Pending this action, individual items of additional equipment are being issued on the basis of justification for the aviation medicine mission.

WINGS AND PAY

It is inevitable that problems related to the authorization of distinctive insignia and additional flying pay for aviation medical officers will have to be resolved. Both incentives have proved necessary in the U S Air Force. The Surgeon General is giving careful thought to these problems.

Of these two incentives, the authorization of distinctive wings appears to be the more immediately important. The identification that is so important to any practice of medicine dictates that aviation medical officers wear wings denoting their status. From custom and long experience, flying personnel have come to expect their physicians to wear wings. Accordingly, The Surgeon General has recently submitted a recommendation that a distinctive insignia be developed and authorized for aviation medical officers. Approval of this recommendation has been deferred pending final action of the Army Uniform Board. If approved, the insignia will probably be the Army Aviator's Badge with caduceus superimposed.

The problem of flying pay for aviation medical officers is a more difficult one. While it is Department of the Army policy that men required to participate regularly in frequent aerial flights as a part of their official duties should be authorized additional flying pay, careful consideration must be given as to who should be entitled to such pay and when. Presently the subject of flying pay for aviation medical officers is resolved by major commanders with wide variations in policy. As a builder of morale, additional pay is a double-edged sword. An example can be found in the infantry division. Battalion surgeons may well resent a medical officer normally working in the divisional rear area who receives additional hazardous duty pay. Another example is in the career

pattern of aviation medical officers themselves. Those men in staff positions at higher headquarters who are best qualified by training and experience but not actually required to fly to the extent of those located at lower echelons will resent the deprivation of flying pay incident to their advancement to positions of greater responsibility.

Personally I would recommend that an aviation medical officer's wings be awarded on a basis of training and experience with designation by The Surgeon General. By contrast I would recommend that additional flying pay be authorized on a basis of actual duties performed with the decision resting with the major commander concerned. This will ensure consonance with current budgetary policies. The MOS 3160 Aviation Medical Officer should be granted to medical officers completing the course of instruction at the U S Air Force School of Aviation Medicine which is the present procedure. Authorization to wear the distinctive wings (when approved) should be withheld until the aviation medical officer has accrued certain additional experience to include a period of duty in aviation medicine, accumulation of a prescribed number of flying hours, the performance of an established number of medical examinations for flying, and the recommendation of a responsible senior Army aviation medical officer.

CONCLUSIONS

There is a requirement for an Army aviation medicine program. The Surgeon General has established such a program and is developing it commensurate with actual needs in the field. Technical guidance based on the adaptation of accepted Air Force medical doctrine to actual Army requirements is considered adequate and is reflected in a medical technical bulletin. The current primary objective of the Army aviation medicine program is the development of an effective organization for its implementation in the field. Full use will be made of established Air Force aviation medicine training facilities and Army medical specialists in existing Army medical installations. Aviation medical officers should be authorized distinctive insignia on completion of certain qualifying experience and on designation by The Surgeon General. Additional flying pay for Army aviation medical officers should be contingent upon actual duties performed and should be the prerogative of major commanders in the field. The Army Medical Service must keep pace with the rapidly growing Army aviation program.

REFERENCE

- L N I S Medical Bulletin 5 220-227 Feb 1954 U S Armed Forces M J



Clinicopathologic Conference

Letterman Army Hospital San Francisco Calif

COUGH DYSPNEA AND CHEST PAIN

Summary of Clinical History A 59 year old white woman was admitted to this hospital on 19 May 1954 with a cough productive of purulent material, shortness of breath, and weight loss. The patient had been in rather poor health since the onset of arthritis some 10 years ago. She first developed symptoms referable to the chest in 1952 when she had a cough which lasted several months. Two weeks before admission she developed a severe, racking cough productive of from 50 to 60 ml of purulent material. This was associated with an aching pain throughout the chest which was aggravated by the act of coughing. During this time she had become progressively short of breath, but she denied any hemoptysis. Over the past 10 years she had lost 55 pounds in weight and during the past 2 weeks she had lost 5 pounds.

A diagnosis of rheumatoid arthritis had been made 10 years ago. The arthritis began in the feet (metatarsophalangeal joints of great toes) involved the metacarpophalangeal joints of the fingers some months later, and eventually involved every joint of the extremities and spine to a slight degree with residual deformity of the joints. She had taken many types of antiarthritis medications, the nature of which is not known. At the time of admission the arthritis appeared to be inactive. Previous operations included a tonsillectomy at the age of 25, panhysterectomy for "bleeding tumor" at the age of 40 and full mouth extractions at the age of 47. She gave no history of rheumatic fever, syphilis, renal disease, or liver disease. She was a known hypertensive of unknown duration. The family history was noncontributory.

Physical Examination The patient's height was 62 in, her average weight, 138 lb present weight, 81½ lb temperature, 99 F, pulse, 72 and blood pressure, 172/78 mm Hg. She was

Brig Gen. James O. Gill, Jr. MC USA Commanding Officer Letterman Army Hospital
Srv Col Wilbur H. Berry MC USA Chief

a thin malnourished appearing Spanish woman in moderate respiratory distress with a frequent cough productive of a green purulent sputum Her movements were slow because of joint distress and general weakness Her eyes appeared sunken The left cornea was considered to be either abraded or to contain edema fluid in that it was irregularly refractile The retinal vessels demonstrated narrowing of the arterioles with mild A V nicking There was a 1 cm hard excoriated lesion of the helix of the left ear An excoriated area was present on the left side of the nasal septum Diffuse inspiratory rales were heard throughout the lung fields but most prominent on the right side The cardiac rate was regular No murmurs were heard The point of maximal impulse was 2 cm lateral to the midclavicular line in the left fifth interspace and was forceful

The firm smooth liver border was 3 cm below the right costal margin The spleen was easily palpable one fingerbreadth below the left costal margin and was firm Pelvic examination was negative On rectal examination there appeared to be a large quantity of yellow green foul liquid feces and mucus The left costo-vertebral angle was tender The hands elbows shoulders knees ankles and feet showed deforming arthritic involvement The metatarsophalangeal joints of the great toes had large red tender swellings with atrophic skin overlying them All of the muscles appeared atrophic and the skin was generally dry and acaly with poor tissue turgor Slight perianal edema and moderate pretibial edema were present There was a 2 by 4 cm freely movable nodule in the right axilla The remainder of the examination did not reveal any significant abnormality

Laboratory Studies Initial laboratory studies were as follows Erythrocyte count 3.9 million per cu mm hemoglobin 7.3 grams per 100 ml leukocyte count 15,300 per cu mm with 78 percent neutrophils 13 percent lymphocytes 3 percent monocytes and 6 percent eosinophils Urinalysis showed a specific gravity of 1.010 4 plus albumin 3 to 4 red blood cells and a few bacteria The serologic test was negative The blood urea acid was 8.2 mg per 100 ml CO₂ 14.2 mEq/L chloride 114 mEq/L calcium 8.2 mg per 100 ml alkaline phosphatase 6.6 units (Shinowara Jones and Reinert method) and potassium 5.6 mEq/L On 21 May the blood urea nitrogen was 64 mg per 100 ml the total protein 9.2 (albumin 5.4 globulin 3.8) gm per 100 ml Acid fast studies of the sputum were negative as were the Papanicolaou smears Sputum culture showed beta hemolytic streptococci alpha hemolytic streptococci and *Micrococcus pyogenes* var *aureus* Culture of a rectal swab showed *Escherichia coli* Repeat urinalysis showed 3 to 4 plus albuminuria with a specific gravity as high as 1.025 On only one specimen were rare coarse

granular casts observed Examination of a stool specimen was negative for ova and parasites A roentgenogram of the chest showed increased lung markings throughout both lungs, suggesting generalized pulmonary fibrosis There was blunting of the right costophrenic sulcus and some thickening along the right lateral chest wall, suggestive of an old inflammatory disease Roentgenograms of both hands showed advanced arthritic changes involving many joints

Course in Hospital When the patient was initially admitted it was not known whether the pulmonary findings were due to primary pulmonary disease or were secondary to congestive failure The venous pressure was 140 mm of water with arm to tongue circulation time of 11 seconds She was digitalized and given thimerin (brand of mercaptomerio sodium) with loss of $3\frac{1}{2}$ lb of body weight in 1 day She was started on penicillin and streptomycin Her pulmonary symptoms seemed to clear 2 days after admission but her general course continued downhill She had retention of nitrogenous products with a nonprotein nitrogen as high as 147 mg per 100 ml Along with this, her CO_2 combining power fell to 10.8 volumes percent and the potassium rose to 8.2 mEq/L Because of the anemia she was given 500 ml of whole blood which restored her hemoglobin level to 11.8 gm per 100 ml In spite of all the therapeutic measures she continued her downhill course and died quietly at 2320 hours on 24 May

DISCUSSION

Dr G. B. N. This 59 year old white woman with emaciation, marked weight loss and chronic illness had had crippling deforming arthritis ultimately involving every joint of the extremities and spine Several features indicated respiratory tract involvement There had been a chronic cough of several months duration some 2 years previously and a severe productive cough for 2 weeks prior to this hospital admission A chest roentgenogram revealed increased lung markings throughout both lung fields She was dyspneic and had diffuse inspiratory rales The liver and spleen were enlarged and firm Diarrhea was implied since rectal examination revealed large quantities of liquid feces Pretibial and presacral edema were present Involvement of the hematopoietic system was manifested by anemia leukocytosis neutrophilia and eosinophilia Finally the marked albuminuria uremia acidosis hyperpotassemia and hyperuricemia denoted the presence of renal lesions May we see the x-rays Doctor Wells?

Dr W. L. Films of the wrists and hands (fig 1) show very extensive destructive changes involving all of the joints of the wrist and most of the joints of the fingers It is a destructive type of ar

thritis with narrowing of the joints and subluxation of some joints. Some joints show ankylosis. There is associated atrophy of the soft tissue. There are the changes seen in rheumatoid arthritis. The lung fields bilaterally (fig 2) show emphysema more or less evenly distributed. There is an increase in the bronchovascular markings which are nonspecific in appearance. There is some thickening of the pleura which would indicate old or possibly a recent inflammatory process in the pleura. The markings in the lung fields are non-specific and are on the basis of fibrosis or peribronchovascular infiltration which is limited to the larger subdivisions of the bronchovascular tree. The heart is not enlarged, there is some enlargement of the aorta. There are no definite hilar nodes visible. In the feet there are extensive changes in the joints which are also consistent with the diagnosis of rheumatoid arthritis.

Dr. G. B. : I shall not discuss each of the diseases that may involve each of the organs and systems implicated in this patient. My remarks will be restricted to the few diseases which could cause all or most of these protean manifestations.

I believe that the arthritis is the key to this case. I am intrigued by the hard excoriated lesion of the helix of the ear, the onset of thethritis in the metatarsophalangeal joints of the great toes, the hyperuricemia, and the evidence of renal disease. Hench and associates of the Mayo Clinic have said that chronic arthritis associated with distinct renal impairment suggests gout until proved otherwise. The majority of gouty patients die of uremia, and the age at onset in this patient is quite compatible with the diagnosis of gout. I can only speculate that the lesion of the helix of the ear was a tophus. The location and description are entirely compatible. I regret that the lesion was not needled and an attempt made to demonstrate monosodium urate crystals by the murex de test. I may similarly speculate that the excoriated area on the left side of the nasal septum overlies another tophus—a not unusual site.

But there are several objections to the diagnosis of gout. Only about 5 percent of gouty subjects are females. A positive family history is present in 50 percent of females with gout. Wolfson and associates² have stated that tophaceous gout in women begins before the menopause, it clearly did not in this case. The hyperuricemia could well be explained on the basis of renal failure. I might mention in passing that the uric acid level in normal and gouty females is lower than that in the male counterparts, and many authorities consider a serum uric acid level of 5 mg per 100 ml in a female a significant as one of 6 mg per 100 ml in a male. Chronic gouty arthritis can be deforming and crippling, but the spine, shoulders, and hips are rarely involved in gout. There are no features suggestive of gout on the x-rays we have available. Another considerable objection is that gout does not explain the pulmonary findings, hepatosplenomegaly, marked weight loss.



Figure 1 Roentgenogram of hands and wrists showing destructive changes involving all of the joints of the wrists and most of the joints of the fingers



Figure 2 Roentgenogram of lung fields showing emphysema and increased bronchovascular markings

anemia or eosinophilia. Two or more unrelated diagnoses would be required to cover the remainder of the clinical picture.

I shall digress briefly from the arthritis to some of the generalized diseases which must receive consideration. Periarteritis nodosa can present many features found in this case. I shall discuss only the objections to the diagnosis. The ratio of male to female patients is four to one and the usual age at onset is from 20 to 40 years. In this patient there was no peripheral neuritis, muscle tenderness, asthma, significant hypertension or history of drug sensitivity. None of the foregoing are indispensable but in the aggregate their absence mitigates against the diagnosis.

Many of the manifestations could be seen in sarcoidosis but this diagnosis fails to explain the chronic deforming arthritis or the renal failure.

Multiple myeloma must also be rejected since the small joints of the extremities are not involved in this disease.

Disseminated tuberculosis with its protean manifestations is always a possibility. This diagnosis cannot be established with the information available; neither can it be excluded.

Lupus erythematosus disseminata could explain the pleuritis, splenomegaly, lymphadenopathy, weight loss, fever, dyspnea, edema, diarrhea, albuminuria and renal failure. Joint symptoms are common. Frequently there are tenderness and swelling of several joints and rarely there are joint deformities indistinguishable from those of rheumatoid arthritis. Females are predominantly afflicted. Among the points against this diagnosis are the negative serologic findings, the age of the patient, the duration of illness and the absence of a skin rash, leukopenia and neurologic abnormalities.

I believe the most likely cause of the joint manifestations is rheumatoid arthritis in spite of the features suggestive of gouty arthritis. I cannot exclude the possibility of the rare coexistence of these two diseases. Rheumatoid arthritis is more common in females and in the chronic stage is often associated with marked joint deformity. Splenomegaly is seen. The corneal lesion may be a part of the picture of Sjögren's disease in which there may be seen punctate lesions of the cornea, dry skin and rheumatoid arthritis. It is most common between the ages of 40 and 65 years. The eosinophilia is compatible with rheumatoid arthritis as are the marked weight loss and moderate anemia. One of the most attractive features of this diagnosis is that rheumatoid arthritis is a recognized predisposing cause for this disease which I believe can explain all of the nonarticular manifestations in this patient. The occurrence of a firm nontender enlarged liver and spleen together with albuminuria in a patient with none of the predisposing diseases renders the diagnosis of amyloidosis almost certain. Chronic wasting diseases, particularly tuberculosis, are the most common pre-

disposing diseases In numerous instances rheumatoid arthritis has been implicated³

I believe that all of this patient's manifestations can be explained by chronic rheumatoid arthritis with secondary systemic amyloidosis and a terminal pyogenic respiratory infection Secondary systemic amyloidosis commonly is manifested by marked weight loss emaciation albuminuria renal failure diarrhea anemia and firm nonpainful non tender hepatosplenomegaly Edema of all degrees of severity is common And I believe that this diagnosis can also explain the roent genographic picture interpreted as generalized pulmonary fibrosis Amyloid in the lung accumulates primarily in and about capillaries and small blood vessels This can give a picture identical with that seen in this patient Finally I am unable to explain the serum proteins in this case The elevated albumin and normal globulin are not compatible with my diagnoses

Dr Gibson's diagnoses

- 1 Rheumatoid arthritis
- 2 Secondary systemic amyloidosis
- 3 Terminal respiratory infection

Doctor Boyl's Diagnoses submitted by the audience are as follows rheumatoid arthritis with secondary amyloidosis glomerulonephritis periarteritis nodosa allergic pneumonitis and lung abscess Would you comment on these diagnoses especially the glomerulonephritis?

Doctor Gibson Glomerulonephritis allergic pneumonitis and lung abscess would explain only a small portion of the clinical picture The other diagnoses have already been discussed in my differential

Doctor Milman What additional information would you have liked to have had?

Doctor Gibson Certainly a Congo red test would have been very helpful One would expect that in amyloidosis of this severity the Congo red test would have been almost certainly positive If more than 90 percent of the dye is removed from the blood stream at the end of 1 hour the test is considered positive and diagnostic The Congo red is taken up by the amyloid which is known to be a protein Virchow named this material amyloid because it stained brown with iodine and he therefore presumed it was a starch

Doctor Milman What about liver biopsy as a diagnostic procedure?

Doctor Gibson I have no personal experience It is said to be valuable in secondary systemic amyloidosis in which the liver is usually involved It would probably not be of value in primary amyloidosis in which the involvement is characteristically of the tongue heart and gastrointestinal tract

Col Milward W Boyl's MC USA Chief Laboratory Service
Lt Col Thomas Imeson, MC USA Assistant Chief of Cardiology Service

D to Amy y What is the frequency of gout?

D t Gib The generally accepted figure is that gouty arthritis comprises 5 percent of arthritides

D t T li The use of the Congo red test is attended with severe reactions especially when it is repeated There are occasional deaths

PATHOLOGIC FINDINGS

D t F d li Grossly the kidneys showed reduction in size and irregular thinness of the cortices Slight prominence and stiffness of the arteries on cut section was evident The surfaces were finely granular The liver showed a markedly accentuated pattern marked by gray tan markings which seemed to follow lobular outlines It weighed 1450 grams which is considered normal The spleen showed poor distinction between red and white pulp It was moderately firm and weighed 310 grams

Microscopic examination of the kidney (fig 3) showed hyalinized acidophilic material within almost every glomerulus In general the material appeared to be diffuse However a tendency toward spherical arrangement was present The afferent and efferent arterioles (fig 4) showed deposition of this acidophilic material within their walls Utilization of the crystal violet stain showed positive staining for amyloid In the kidney in amyloidosis the glomeruli are almost always involved and sometimes are the exclusive site of the deposition This results in great enlargement of the glomeruli although ultimately they may shrink The amyloid appears to be laid down in the basement membranes of the capillary loop Parenchymal reaction to amyloid is minimal If the process lasts long enough the final result is complete fibrosis of the glomerulus Generally the afferent arterioles show the greatest involvement and the efferent arterioles are involved only in advanced case The kidney tubules showed by fine droplet degeneration Many pathologists believe that this represents antecedent albuminuria

Microscopic examination of the spleen showed here also deposition of amyloid within trabecular central and penicillate arteries (fig 5) In some cases the amyloid is deposited diffusely throughout the spleen

The adrenal gland showed amyloid deposition throughout

The liver (fig 6) showed deposition of amyloid within the portal blood vessels Generally the amyloid material is deposited between the endothelial cells and the liver cords In this case however the distribution is somewhat unusual and resembles that seen in primary amyloidosis in that the deposit is most marked in the larger portal blood vessel Also it is unusual in that the liver was not enlarged

C I H Old I Amy y MC USA Ch f R d l gic Serv

Maj Maurice Tul MC USA R h Co-ordin or

Maj Edward J F d li MC USA R d P h l gy



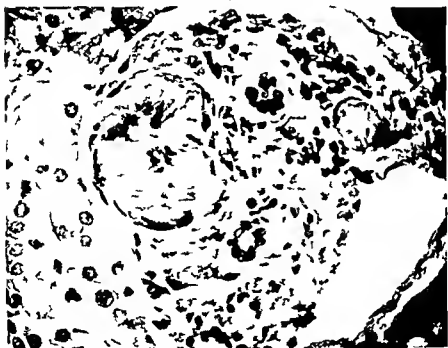
Figure 3 Photomicrograph showing amyloid deposition within the glomeruli of the kidney



Figure 4 Photomicrograph showing amyloid deposition in the walls of a arterioles of the kidney



Figur 5 Ph t micr gr ph how g amyl id d p itto i vas la alls / th ol



Figur 6 Ph t micr gr ph howi g amyl id depositio the walls / th portal blood ve l / th liver

Generally amyloid deposition results in enlargement of the liver to a considerable degree. Biopsy of the liver is an ideal method of proving the presence of amyloidosis.⁶ This measure should be considered when the possibility of amyloidosis arises clinically.

The lung showed about the bronchi numerous subepithelial chronic inflammatory cells associated with a rather pronounced degree of hyperemia. The diagnosis of chronic bronchitis was made. Pulmonary fibrosis or pneumonitis was not present at autopsy. The pituitary gland showed changes like those described by Pearce^{7, 8} in rheumatoid arthritis. Enlarged basophils were present with rather large granules restricted to one part of the cell. The significance of this lesion is unknown. Sections taken from the joints for microscopic study showed the changes of chronic rheumatoid arthritis consisting of slight chronic inflammatory cell infiltration and fibrosis of synovia together with some fragmentation of cartilage. There was one zone of pannus formation.

In summary this case is one of secondary amyloidosis with amyloid deposition in the kidneys, liver, spleen and adrenals predominantly. The cause of death was renal failure secondary to the amyloid contracted kidney. The most logical explanation for the cause of the amyloid change is the described rheumatoid arthritis. Amyloid deposition in the absence of suppuration has been described in this disease.⁹ Renal insufficiency with consequent nitrogen retention and uremia occurs in unusual instances of the amyloid contracted kidney.

Anatomic diagnoses

- 1 Secondary amyloidosis with renal insufficiency
- 2 Rheumatoid arthritis

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CASE REPORTS

Epigastric Hernia Simulating Gastrointestinal Tract Disease

FRANCIS P. CATANZARO *Capt USAF (MC)*

EPIGASTRIC hernia or hernia through the linea alba is said by Watson to account for about one percent of all hernias. In the armed services however this hernia seems to be more frequent than statistics indicate. A majority of patients with this variety of hernia are asymptomatic and unaware of its existence and diagnosis depends on careful physical examination.

At this hospital during the past three years 12 epigastric hernias have been repaired. During this same period a total of 96 patients with hernias of all types underwent operative procedures at this installation. Although these figures are not large enough to be significant statistically they give some indication of the frequency of epigastric hernia and should serve to alert the examiner to its possible presence particularly in patients with gastrointestinal symptoms. During the past year three patients gave histories suggestive of upper gastrointestinal tract disease and on physical examination were found to have epigastric hernia. These hernias were repaired resulting in complete relief of symptoms in each instance.

CASE REPORTS

Case 1. A 40 year-old airman was admitted to the hospital on 26 April 1955 for a bilateral high ligation and stripping of the long saphenous veins. He stated that for the past 3 or 4 years he had been having repeated episodes of epigastric pain and bloating shortly after meals with occasional episodes of vomiting and that he frequently experienced a burning sensation in the upper abdomen. Roentgenograms of the upper gastrointestinal tract had been made at another installation about 2 years previously and these were reported to be negative.

On physical examination a small epigastric hernia was found about 2 cm above the umbilicus to the left of the median line. The hernia was about 1.2 cm in diameter and was not reducible.

Under local anesthesia a small transverse incision was made over the hernia which was found to contain preperitoneal fat of the falciform ligament. The hernial ring was about 1 cm in diameter. The fat was

amputated and the hernial orifice closed with interrupted 000 cotton sutures. The skin was closed with inverted mattress sutures using 0000 cotton. The patient was followed postoperatively for 3 months at the end of which period he was asymptomatic, eating well and gaining weight.

Case 2 This 32 year old airman had a similar history of epigastric pain and discomfort following meals with occasional bouts of nausea but no vomiting. He denied episodes of hematemesis, melena, weight loss or relief of pain by ingestion of food. While being followed in the outpatient department an upper gastrointestinal series was done and recorded as negative.

On physical examination he was found to have a small epigastric hernia to the left of the median line about 3 cm from the umbilicus. This hernia was about 1 cm in diameter and was moderately tender to palpation.

The patient was admitted to the hospital and the hernia repaired under local anesthesia using the same surgical procedure as described in case 1. The patient has been followed for 6 months and has gained 6 pounds. He has not experienced recurrence of his upper gastrointestinal tract symptoms to date.

Case 3 This 23 year old airman while at work in the radiology department at this hospital suddenly experienced severe epigastric pain radiating down to the right lower quadrant and producing extreme weakness and nausea. On examination his blood pressure and pulse were within normal limits. The abdomen was soft and a small epigastric hernia was found 1 cm above the umbilicus in the median line. It was extremely tender to palpation about 1.2 cm in diameter and irreducible. The following morning the patient was taken to the operating room and under local anesthesia a small transverse incision was made over the hernia. A small portion of preperitoneal fat was noted to protrude through a fascial ring measuring about 8 mm. in diameter. With gentle tug on the preperitoneal fat the patient complained of severe epigastric pain radiating down to the right lower quadrant and reproducing his symptoms of the morning before. The preperitoneal fat was amputated, the hernial ring closed with interrupted 000 cotton sutures and the skin approximated with interrupted 0000 cotton sutures. The patient returned to work the following day. He was followed for 10 months during which time he had no recurrence of epigastric pain or discomfort.

DISCUSSION

Epigastric hernia is usually located above the umbilicus, to the left of the median line. Less frequently it is found in the center or just to the right of the median line. It is extremely small and its fascial ring commonly measures only 1 to 1.5 cm in diameter. A sac is rarely found. The hernial opening may contain falciform ligament, preperitoneal fat, omentum, or, occasion

ally intestinal viscera About 75 percent of the patients with epigastric hernia will have no symptoms whatsoever and diagnosis will depend on a careful physical examination A small group will present subjective symptoms referable to the upper gastrointestinal tract these symptoms may mimic the ulcer syndrome There are frequent comments in the literature concerning the association of epigastric hernia with gastric ulcer Watson reported that 25 percent of epigastric hernias with symptoms show changes in the gastric juice and Allesandrini² reported that several cases demonstrated hyperacidity, lessened mobility and dilation of the stomach It is possible to theorize from these findings that the increase in gastric acidity in epigastric hernia may predispose to the formation of gastric or duodenal ulcer However the actual coexistence of ulcer and epigastric hernia is rare, and the gastrointestinal symptoms most likely can be explained on the basis of a dragging or pulling of the umbilical ligament or omentum which is protruding through the hernial orifice Actual incarceration or strangulation is unusual and not reported with any significant frequency in the literature Three of the patients observed here during the past year presented marked gastrointestinal symptoms as a chief complaint One other patient had no symptoms whatsoever but at the time of operation the hernia was found to have two openings through the fascia Multiple openings are not found frequently but should be looked for in every instance

SUMMARY

Three patients with epigastric hernia had marked upper gastrointestinal symptoms that disappeared after a minor surgical procedure This article has been presented to renew interest in an often overlooked surgical entity and to stress its frequent association with the symptoms of upper gastrointestinal tract disease

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Knowledge is a process of putting facts to wisdom lies in their simplification.—Martin T. Fischer

Severe Neurocirculatory Collapse at Simulated Altitude

MANAH R. HALBOUTY *Colonel USAF (MC)*

JOHN J. HEISLER *Captain, USAF (MC)*

NEUROCIRCULATORY collapse at either true or simulated altitudes is not uncommon. Apparently many of the severe cases are not reported in current medical literature. The greatest number of known cases that do occur are found in physiological training units where personnel are subjected to simulated altitudes. Most of these patients survive because of the close scrutiny provided during altitude chamber runs and the ready and immediate medical care available to the physiological training units.

When a case of neurocirculatory collapse occurs in actual flight the patient often does not survive unless early adequate medical care is provided. Unavoidably at times, such care is several or many hours away. In most cases, early medical care will prevent the patient from going from slight or moderate collapse into deeper irreversible collapse.

It is considered essential that all Air Force physicians (not only Aviation Medical Examiners and flight surgeons) and all flying personnel become thoroughly familiar with the signs, symptoms, and treatment of neurocirculatory collapse to assure early recognition and treatment. Cases occurring in actual flight can be aided by crew members until a physician's services are obtained.

Currently, there is much to be learned about the etiology, physiology, clinical picture, and treatment of this condition. The School of Aviation Medicine has issued an excellent practical guide¹ for treating these patients. To generalize about the management of these cases is not without danger. Here as in the practice of medicine generally, a physician must individualize.

To our knowledge, the true cause of neurocirculatory collapse at high altitudes has not as yet been pinpointed. The consensus of medical opinion seems to be that the causative factor is usually an ischemic hypoxia from gaseous emboli and/or vasospasm which may be localized or generalized and which may affect any organ or parts of any organ.

ally, intestinal viscera About 75 percent of the epigastric hernia will have no symptoms whatsoever. The diagnosis will depend on a careful physical examination. A group will present subjective symptoms referable to the gastrointestinal tract; these symptoms may mimic the epigastric syndrome. There are frequent comments in the literature on the association of epigastric hernias with gastric ulcers. It is reported that 25 percent of epigastric hernias will show changes in the gastric juice and Allesandri¹ reported that several cases demonstrated hyperacidity, lesser secretion and dilation of the stomach. It is possible to theorize from these findings that the increase in gastric acidity in epigastric hernia may predispose to the formation of gastric or duodenal ulcers. However, the actual coexistence of ulcer and epigastric hernia is rare and the gastrointestinal symptoms must be explained on the basis of a dragging or pulling of the epigastric ligament or omentum which is protruding through the hernia. Actual incarceration or strangulation is uncommon and is reported with any significant frequency in the literature. Of the patients observed here during the past year, 10 had marked gastrointestinal symptoms as a chief complaint. One other patient had no symptoms whatsoever but at operation the hernia was found to have two opening in the fascia. Multiple openings are not found frequently and should be looked for in every instance.

SUMMARY

Three patients with epigastric hernia had marked gastrointestinal symptoms that disappeared after a minor operation. This article has been presented to renew interest in this often overlooked surgical entity and to stress its association with the symptoms of upper gastrointestinal disease.

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Knowledge is a process of piling up facts; wisdom is the simplification.—Martin T. Fischer

flight he felt a little fatigued and "just didn't feel well" but did not report this. The chamber ascent was made at a rate which gradually increased from 1 000 feet per minute to 3 000 feet per minute; the peak altitude of 43 000 feet was reached at 1402 hours. Thirty seconds later the officer placed his hand to his forehead as if to indicate dizziness at discomfort; then rubbed his shoulders to indicate pain. The chamber was immediately dropped and at 30 000 feet he lost consciousness and urinated involuntarily. Inside the chamber the observer requested immediate descent, used the emergency setting of the oxygen regulator on the patient, and requested the immediate services of a flight surgeon. At 1407 hours the patient was at ground level and semicomatose; the flight surgeon put him to bed in the physiological training unit's recovery room and continued the administration of 100-percent oxygen by mask. The patient complained of dizziness, twitching eyelids, numbness of both arms (particularly the elbows), mild generalized cephalalgia, and blurring of vision.

At 1410 hours the blood pressure was 150/80 mm Hg, pulse 96 and respirations 18. Response to questioning was slow and the sensorium was clouded, but the patient was oriented as to time and place. Nystagmoid eye movements, cool and moist skin, and hypesthesia of the forearms were present. Dexttan was started, 28 to 30 drops per minute being given intravenously. The blood pressure fell to 110/80 mm Hg and the pulse increased to 109. Other objective and subjective signs and symptoms remained relatively unchanged. The patient was moved by litter to a hospital ward at 1500 hours where better care could be given. Oxygen and dextran were given continuously during the movement, but he became very pale, began to sweat profusely, and vomited clear material. The pulse became more rapid and weak.

On admission to the hospital the blood pressure was unobtainable; the pulse was weak and thready with a rate of 150; respirations were 40 and shallow; skin was cool and moist and marked pallor was evident. The lungs were clear and there was no paralysis. Surprisingly, the sensorium had improved slightly. Conventional shock therapy was instituted and the response was rapid: in about 5 minutes the blood pressure was 90/50 mm Hg, the pulse 140, the respiration 30, and the skin regained normal color and temperature. Shock blocks were removed.

At 1730 hours the blood pressure was stabilized at 120/70 mm Hg, the pulse at 96, and the respiration at 16. Temperature was 98.6° F. Examination and questioning of the patient at this time revealed dizziness, frontal headache, blurring of vision, paresthesia of both forearms, inability to maintain visual fixation, bilateral nystagmus, diminished corneal reflexes, and sluggish pupillary reactions to light. The abdomen was moderately distended; generally gastrointestinal gas was increased and peristalsis was normal to slightly increased. At 1840 hours the patient became very restless and vomited a clear liquid material. Vomiting occurred again at 1930 hours; however, on this occasion the vomitus was noted to be a brown liquid.

At 2130 hours the patient became very restless and quite confused mentally. The skin of his face and neck was mottled and funduscopic examination revealed spasm of retinal arterioles and blurred disk margins. Administration of oxygen by mask was continued until 2150 hours when a tent was used. Special nurses were assigned and the patient closely observed from the time of initial hospital admission with recordings every 15 minutes of blood pressure pulse temperature condition et cetera. After the 2130-hour examination a spinal tap was performed and 12 ml of spinal fluid was slowly removed. Spinal fluid pressure was reduced from 260 mm of water to 140 mm. of water. During the following 1½ hours the patient seemed much less confused mentally and less restless. However at 2310 hours he became semicomatose and hyperventilation began with carpopedal spasms. The spasms were controlled by use of a paper sack over the nose and mouth for rebreathing.

Laboratory findings were as follows. The urine was cloudy and acid with a specific gravity too high to read. It was negative for albumin; there was a trace of sugar and of acetone. The hemoglobin was 15.6 grs per 100 ml. the hematocrit 54. Spinal fluid was clear with 17 cells (7 polymorphonucleocytes and 10 lymphocytes); sugar was 36 mg. chlorides 715 mg. and total protein 98.7 mg. all per 100 ml. An electrocardiogram showed inverted T waves in leads V and V₄; diphase T waves in V₁ and V₂.

Treatment consisted during appropriate periods of 1,000 ml of dextran, 500 ml of whole blood and 30 ml of 50 percent dextrose intravenously and vasoxyl (brand of methoxymine hydrochloride), paraldehyde, chloral hydrate, penicillin and oxygen.

On 20 March carpopedal spasm continued intermittently for about 2 hours. The patient became more deeply comatose and was restless and incontinent of urine. At 0830 hours his temperature was 102.2° F by rectum; blood pressure was 132/84 mm Hg; pulse 134 and respirations 24. At 1030 hours he had an emesis containing old blood. The abdomen was generally distended. After vomiting ceased 10 ml of spinal fluid were allowed to drain off slowly. This reduced the spinal fluid pressure from 160 mm of water to 110 mm of water. A Levin tube was inserted and Wangensteen drainage started.

At 1400 hours the coma became very deep; the patient's pupils became fixed and corneal reflexes were absent. Cheyne-Stokes respirations began and continued intermittently for about 2 hours. The temperature increased to 104.6° F by rectum. At 1900 hours coma remained deep and response was possible only to supraorbital pressure. This response mainly consisted of movement of his left lower extremity and slight movement of his right lower extremity. The pupils were small, fixed, and did not react to light. Corneal reflexes were absent bilaterally. A gag reflex was present and deep tendon reflexes were minimal except for a hyperactive right biceps jerk. Abdominal and

cremasteric reflexes were absent. Strong Babinski, Chaddock, and Oppenheim signs were present on the right; the Babinski sign was weakly present on the left. A right spastic hemiparesis was noted, particularly in the lower extremity.

Respiratory excursions were shallow and erratic. Four physicians examined the lungs by percussion, auscultation, and palpation; no noteworthy findings were discovered except for a deepening of the tissues over the suprasternal notch with each inspiratory effort, and a suggestion of a possible tracheal obstruction with tenacious secretions. Some laryngeal stridor was present. Because of the respiratory difficulty and the critical condition of the patient, and with a view to aiding nursing care, it was decided to perform a tracheotomy under local anesthesia. This was accomplished at 2200 hours. Much thick tenacious and clear mucoid material was removed by suction from the trachea and upper bronchial tree. This material was undoubtedly the main cause of the patient's respiratory difficulty because he immediately began to breathe more easily and rested much more quietly the rest of the night.

Laboratory findings were as follows. The urine was yellow, hazy, and acid, with a specific gravity of 1.040; it was negative for albumin, acetone, and bile. Sugar was 2+; there were 8 to 10 white blood cells and 4 to 5 epithelial cells per high power field. The red blood cell count was 5,600,000 per cu. mm. (at 0200 hours) and 4,900,000 (at 1000 hours). Hemoglobin was 16.3 grams per 100 ml. (at 0200 hours), and 14.8 (at 1000 and 1500 hours). Hematocrit was 49 percent (at 1000 hours) and 46 (at 1500 hours). The white blood cell count was 20,000 per cu. mm., with 85 percent polymorphonuclears, 12 percent lymphocytes, and 3 percent monocytes (at 1000 hours), and 16,700 with 87 percent polymorphonuclears, 10 percent lymphocytes, and 1 percent monocytes (at 1500 hours). The CO_2 combining power was 23 volumes percent. The spinal fluid was slightly cloudy with 21 cells (6 polymorphonuclears, 15 lymphocytes); sugar was 26 mg., chlorides 743 mg., and total protein 183 mg., all per 100 ml.

Treatment consisted of tent oxygen, 500 ml. of dextrose, 2,000 ml. of 5 percent dextrose in distilled water, 100 ml. of human serum albumin, 500 ml. of plasma, streptomycin, penicillin, paraldehyde, and phenobarbital sodium.

On 21 March the patient's temperature remained fairly constant in the vicinity of 102° F. (rectal) during the early morning hours and at about 101.4° F. throughout the remainder of the day. By 0800 hours his coma had definitely decreased, but it was not possible to arouse him completely. By 0900 hours he could be aroused and answered simple questions with an affirmative nod or a negative shake of his head. At 1500 hours there were the following findings: slight rigidity, restlessness with moderate movements, slight to moderate dehydration, equal pupils which reacted normally to light, diminished reflexes.

reflex absent left corneal reflex a 1 plus sp sm in several arteriolar segments on funduscopic examination equal and active deep tendon reflexes absent abdominal and cremasteric reflexes bilaterally equal strength in legs arms and hands Babinski reflex present on right and absent on left, and positive Chaddock and Oppenheim signs on right The patient's general condition improved steadily throughout the day and by 2000 hours he was able to answer questions in a rational and coherent fashion At this time both pupillary and corneal reflexes were normal The abdominal reflexes had returned but the cremasteric reflexes remained absent Blood pressure was 138/80 mm Hg pulse 80 and temperature 101 F He rested well during the night

Laboratory findings were as follows Red blood cell count was 3 900 000 hemoglobin was 14.5 grams (at 0800 hours) and 12.7 grams (at 1600 hours) both per 100 ml Hematocrit was 44 percent (at 0800 hours) and 40 percent (at 1600 hours) The white blood cell count was 12 400 per cu mm with 84 percent polymorphonucleocytes and 16 percent lymphocytes The CO combining power was 28 volumes percent

Treatment consisted of 1 000 ml of plasma 3 000 ml. of 5 percent dextrose in distilled water streptomycin penicillin and multivitamins

On 22 March the patient's condition was much improved he was able to take liquid and a soft diet The only positive findings remaining were a slight mental dullness with some difficulty in memory for recent events lightly diminished visual acuity bilaterally and slightly less strength in the right lower extremity as compared to the left

Improvement was rapid and all neurologic findings and vision were normal by 25 March Convalescence was uneventful and the patient was discharged to duty (not involving flying) on 12 April On 16 April he was returned to flying with instructions to remain at altitude of 20 000 feet or less

DISCUSSION

The advisability of spinal punctures in cases of neurocirculatory collapse is debatable Some neurosurgeons are convinced that spinal punctures should never be performed in this condition whereas others are just as strongly convinced that the procedure should be done In a case previously reported performance of a spinal puncture with slow release of spinal fluid markedly improved the patient and seemed to be the lifesaving therapeutic procedure In the case reported above improvement was only temporary but definite for short periods however spinal puncture may have contributed to the later regression of the patient Spinal puncture was not performed in any of the seven fatal cases described by Adler He emphasized that, although it may have been coincidental several patients in his report improved clinically

cally soon after spinal tap. Decision as to whether or not to perform spinal puncture must rest with the individual physician. Until more positive proof is obtained indicating that such procedures are precluded, we will continue to lean toward using careful spinal punctures.

In retrospect, it may have been better in this instance not to have moved the patient from the emergency room of the physiological training unit so soon. However, it was decided to move the patient to the hospital because better care could be afforded him there than was possible in a small, crowded emergency room.

It is extremely important that fluids given intravenously be administered at a very slow rate to prevent sudden pulmonary edema, cerebral edema, or overtaxing of an already overloaded cardiovascular system.

This case well demonstrates the rapidity with which changes in the patient's condition can occur, and stresses the need for constant close medical observation. The initially increased total white blood cell count with increased polymorphonucleocytes and the initially increased spinal fluid pressure, the persistence of spinal fluid cells, the persistently elevated spinal proteins, and the decreased spinal fluid sugar can easily confuse the diagnosis and suggest one of the meningitides or other central nervous system infections unless the physician obtains a good history and is familiar with the neurocirculatory collapse syndrome. It is stressed that some patients may exhibit no symptoms or only slight symptoms until several hours after a flight is completed. The initial hemoconcentration in this case may be related to the "blood sludging" described by Knisely and Bloch.⁴

The decreased CO_2 combining power probably reflects the severity of the patient's shock, although in this case one might have expected an increase in the CO_2 combining power in view of the marked hyperventilation that was noted even while the patient was comatose or semicomatose. The exact reason for the patient's hematemesis was unknown. There are many possible causative factors which will not be discussed here.

The turning point for improvement in this patient apparently was the tracheotomy.

Immediately after the above incident it was decided to obtain more information on all trainees prior to chamber ascents. As a result a combined physical examination questionnaire form was prepared for recording the trainee's name, age, height, weight, pulse, temperature, blood pressure, et cetera. All personnel assigned to the physiological training unit were given special instructions in the methods of obtaining this information.

obligatory that the trainee himself complete the form with information concerning previously experienced symptoms during actual or simulated flights to high altitudes past history of headaches or fainting or emotional disturbances, any feeling of present fatigue or illness (cold sore throat sinusitis ear defects, fever diarrhea et cetera) history of recent immunizations use of alcoholic beverages physical defect waivers et cetera Any trainees 35 years of age or over those overweight, and those indicating by our physical findings or by their answers that their case should be further investigated are interviewed personally by the physiological training officer who records appropriate comments on the form The trainee is then interviewed by a flight surgeon who makes the final determination as to whether a flight should be undertaken This procedure has considerably reduced the number of chamber reactions in the 14 months since use of the form was initiated, no serious reaction has occurred locally during simulated flights

Further research study and reporting of neurocirculatory collapse cases by the medical profession is believed indicated to afford more information in regard to the causes clinical picture and therapy of this syndrome

SUMMARY

In a case of neurocirculatory collapse resulting from simulated altitude flight many bizarre neurologic and circulatory signs and symptoms were noted. The patient also demonstrated the rapidity with which clinical improvement can change. Therapy consisted primarily of close observation and conservative medical care however two spinal punctures and a tracheotomy were also performed. The spinal punctures only temporarily aided the patient however the tracheotomy marked the turning point toward improvement and eventual recovery. Use of a locally prepared combined physical examination questionnaire form has considerably reduced the number of chamber reactions and no serious reactions during simulated flights have occurred in the 14 months since use of the form was initiated.

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Primary Carcinoma of the Jejunum With Massive Gastrointestinal Hemorrhage

TIMOTHY N CARIS *Captain, USAF (MC)*

BRUNO EISEN *Captain, MC USA*

CLESTON W GILPATRICK *Major MC USA*

P RIMARY carcinoma of the jejunum is uncommon, but this site is the most frequent one for carcinoma of the small intestine. In 1940, after a survey of cases for 32 years, 108 malignant tumors of the small intestine were reported by the Mayo Clinic.¹

Massive gastrointestinal hemorrhage as the presenting symptom of carcinoma of the jejunum is sufficiently rare to justify the report of a single case.

CASE REPORT

The patient, a 21 year-old man, sought medical attention because of progressive and easy fatigability and marked weakness for the preceding 12 hours. The patient had not felt well for the previous 4 months because of nervousness and easy fatigability.

The history by systems was noncontributory except for occasional burning in the epigastrium. These episodes were infrequent, not related to nor modified by the ingestion of food. There was no history of nausea, vomiting, hematemesis, and tarry or bloody stools. Physical examination revealed an apprehensive, pale, afebrile white man with a pulse rate of 110 per minute and a blood pressure of 110/70 mm. Hg. The remainder of the examination revealed no significant abnormality except for blood on the examining finger following rectal examination.

Within 1 hour after admission to the hospital the patient had a large bloody bowel movement. Sigmoidoscopic examination revealed no bleeding sites, but blood could be seen coming from above the end of the sigmoidoscope. A gastrointestinal series performed 12 hours after admission revealed considerable spasm of the pylorus. The duodenal bulb did not fill until 15 to 20 minutes after the ingestion of the barium; then it was irritable and emptied frequently except for a speck of barium on the midportion of the posterior wall. On all spot films a persistent rounded patch of barium with a radiolucent ring (thought to be due to edema) was seen (figs. 1 and 2). The remainder of the upper gastrointestinal tract was thought to be normal.

From Brooke Army Hospital, Brooke Army Medical Center, Fort Sam Houston, Texas



Fig 1. A. p. tc. u. w. f. the d. denal b. lb. d. mo. trating the sim-
lat d. lc. c. t. r. f. ll d. w. th. b. n. m. a. d. th. r. und. g. ad. l. t. xom.
tho. ght. t. b. d. mato. m. g. l. t. m.



Fig 2. R. ght. t. r. bl. qu. u. w. f. th. duodenal b. lb. d. mo. t. t. g. the
bar. um. filled. cr. ter. a. d. u. r. ound. g. zo. f. ad. iol. cency.

On admission the patient's hemoglobin was 10.7 grams per 100 ml with a hematocrit of 32 percent. He received 1,500 ml of whole blood in the next 36 hours, and during this time he had three additional bloody bowel movements. The patient's pulse rate remained persistently over 110 with a blood pressure of 100 mm Hg systolic. Even after receiving the blood the patient's hemoglobin was found to be 10.7 grams per 100 ml with a hematocrit of 33 percent. It was believed at this time that the patient had a persistently bleeding duodenal ulcer and that surgical intervention was indicated.



Figure 3 Photomicrograph of jejunal mucosa adjacent to the polypoid tumor base. The base of the jejunal mucosa can be seen with the underlying muscularis mucosa. In the submucosa there are glands of tumor cells invading laterally from the base of the polypoid tumor ($\times 105$).

A bilateral subcostal incision was used for exploration. On entering the peritoneal cavity blood was seen within the small and large bowel. Examination of the small bowel at the ligament of Treitz, however, failed to show blood in this area. An intraluminal tumor was encountered about 18 inches distal to the ligament. The small bowel was opened away from the tumor and examination revealed an adenomatous polyp measuring 5 cm in diameter. Two areas of ulceration measuring 4 to 5 mm in diameter were adjacent to the mass. These were definitely identified as the site of bleeding. The small bowel was resected taking about 5 inches on both sides of the tumor and an end-to-end anastomosis was performed.

Because of the clinical and radiologic diagnosis of duodenal ulcer a duodenotomy was performed. No abnormality could be detected visually or by palpation and the duodenum was closed. The abdominal wall was closed in layers and the patient made an uneventful postoperative recovery.

Pathologic studies showed the tumor to be adenocarcinoma of the jejunum without lymph node involvement (fig. 3).

A repeat upper gastrointestinal series 1 month postoperatively showed no abnormalities.

SUMMARY

Gastrointestinal bleeding in a young man was diagnosed clinically (and confirmed radiologically) as a bleeding duodenal ulcer. In spite of therapy the patient continued to bleed and a laparotomy was performed. At the time of operation the duodenum was found to be normal and a polypoid adenocarcinoma encountered in the jejunum about 18 inches from the ligament of Treitz was resected.

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THE AIR WAY IN ACUTE HEAD INJURY

The occurrence of concomitant chest injuries among patients suffering from head trauma further increases the mortality rate. Tracheostomy has been shown to have definite therapeutic effects in this group: a mechanical cleansing of the airway by easy removal of excessive fluids or blood from the tracheobronchial tree; well as relief of laryngeal obstruction from edema, bleeding, or faulty function of the vocal cord; and a physiological decrease in the amount of dead space in the respiratory tract and a diminished resistance to breathing. Furthermore, tracheostomy has the advantage of being a well tolerated, simple, and single procedure. It is direct and definitive. Less experienced ward help can take over aspiration and management of the oxygen catheter and alcoholic instillable and severely injured patients are most easily managed in this manner.

—ALEX W. ULIN, M.D.

and HUBERT L. ROSOMOFF, M.D.

A. M. A. A. b. of S. g. r. y.

p. 760 N. 1953.

A MESSAGE FROM THE A M A

Lass then 60 hours bafore the Doctor Dreft Lew would expire, Congress sant tha hill to ax tend this law for 2 mora years to the White House for signature On 30 Juna et 7 10 p m, the Presi dant signad the hill which hecemo Public Lew 118, 84th Congress

Tha continuation of this special draft lew, as amendad and ax tendad, reitains the same four priorities for the call up of physi cians to activa duty es was contained in tha old law The Doctor Draft remains in affect for 2 more yaers or until 1 July 1957 In addition, the \$100 per month aqueliztion pay for physicians, dentists, and others on ective military duty was continuad for 4 more years or until 1 July 1959 The naw law providas only two meyor changes from tha old ect First, it axempts from military sarvice eny physicien or dontist, 35 yeers of age or older, whosa appplication for e commission in one of the armed services es a physician or dentist is or has been rejected on the eole ground of e physical disquelificetion Secondly, the ege limit for call up of spocial registrants was lowered from 51 to 46 After 1 July, all physiiciens who heve reeched their forty sixth birtthday ere exempt from involuntary induction into the Armed Forces

It eould be noted that these two changes are not retroactive Physiiciens already on ective duty prior to 1 July are not eli gible for discharge even though they would be exempt from in duction under the recently anected changes Such individuals must serva their obligeted tours of duty as provided for in the provisions of tha old lew Tha Dapartment of Defense also em phasizad that those parsons who wara meraly classified 4-F by thair drnft boards likawisa would not ha effected by tha naw amand mant Only those persons who applied for e commission es a med ical or dantal officar in ona of tha armed sarvices and wara re jacted on physical grounds would ha exmpt

Tho American Madical Assocretion ectivaly opposad tha con tinuation of this highly discriminatory lew Tha Doctor Draft Act ax tention originally introduced as H R 6057, 84th Congress, was favorably reportad by tha Housa Armed Sarvices Committea eftar hearings hed haan conducted Approval was withheld by tho Housa Rulos Committea until further justification for the ax tention was presonted by the Armad Sarvices Committee

Fom th C uncil N tional Def ns of the Am rican M dcal As ociati The v w a d p : ns expre sed are not eces arily tho e of the Oepartm t of Def nse —Ed to

The Senate then added the Doctor Draft as a separate title to the regular draft bill for a 4 year extension of the Universal Military Training and Service Act which was passed by the House in February. This combined bill (H R 3005) was passed by the Senate on 16 June.

However there were several major and some minor differences between the House version of the bill which dealt solely with the regular draft and the Senate bill which included the Doctor Draft extension with the regular draft provisions.

A Conference Committee of House and Senate members was appointed to resolve these differences. The Conference report was called up for House action on 28 June.

It is significant to realize that the procedure up to this point was to tie in the Doctor Draft extension with the vital extension of the regular draft and on the basis of a Conference report to force a vote on the bill without consideration, debate and amendments under the usual rules and practices of the House of Representatives.

To prevent this action after the Conference report was called up for House consideration a motion was introduced to recommit the bill to the Conference Committee. This motion was defeated by a vote of 221 to 171.

Following this the House then voted 388 to 5 to accept the Conference report which in effect passed the act. Shortly thereafter the Senate passed, without opposition, the compromise measure as agreed upon by House and Senate conferees.

In its testimony before the Senate Armed Services Committee the American Medical Association pointed out that the provision of an adequate career medical officer procurement program for the Armed Forces is the problem that must be solved today. Continuation of the Doctor Draft will not solve this problem but it has apparently become easier to postpone a solution by convincing Congress every two years that the law should be extended than to solve the basic problem involved.

It is gratifying to report that during the latter part of July the Department of Defense called a conference between representatives of the Military, the medical profession and the dental profession for the purpose of outlining an attractive career program to resolve this vital and acute problem. The American Medical Association has long been on record as endorsing the principles of such a program and sincerely hopes that implementing legislation can be passed without delay.

PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army, Navy, and Air Force have recently received *temporary* promotions to the rank indicated

Medical Corps

Ge g C Ald ma Lt USN	Al J Jomonv II Lt USN
K nnerth Z Alt hulet Lt USN	Meyer Kapla Lt USN
Richard R A d on Lt USN	Marrs G A I k Lt USN
William H Baud Lt USN	B rnard Kra Lt USN
Ortha J Ba n st Lt USN	J b M. Ar y Maj USA
J ck B hrma Lt USN	K dr ck P La Lt USN
Arthur Brody Lt USN	R b tt R L ma d Maj USA
Ott C. B ns Maj USA	P t B L s l e Lt USN
Do M Burma Lt USN	Harvey R L nthal Lt USN
Ca l H Cath t Jt Lt USN	J ba H L hn Lt USN
H ary S Cart Lt USN	Eug W Ma h Lt USN
Sam l P Cop land Jt Lt USN	Donald J M ha Lt USN
L onard J Corw Lt USN	All T Mo Lt USN
J b W Co Lt USN	P ul F N ra Lt USN
Fra k R D xh m t Lt USN	Edw rd M Orntz Lt USN
Phil p R Dodge Maj USA	L e C Pa k, Lt USN
K ns th V D l Lt USN	Phano L P J Lt USN
L m d D loll Lt USN	P t S Pint Lt USN
R bet A Es tw d Lt USN	Rawd n E Rambo Lt USN
Mead C Edmund Jt Lt USN	J hn M R J Lt USN
Chael W Ehl III Lt USN	R hard J Schilling Lt USN
Edw rd N Ebl ch Lt USN	Thoma F Silva Jt Lt USN
Le W Elg n J Lt USN	Edwa d C Sinnott Lt USN
Ira I Elia ph Lt USN	R bert A Smith Lt USN
Irv ng P E y Lt USN	J hn F Sode str m Lt USN
Arma d F dal Lt USN	J ph H S pheas Lt USN
Laur nc H F astrs Lt USN	Be jamn C. Ste ns Jr Lt USN
Lest M Felt J Lt USN	W nd ll A Stim ts Lt USN
Eugen M Fi t Lt USN	R hard H T b r Lt USN
Gl n A Folmsb Lt USN	J ph J T nro Lt USN
M t L Godley Lt USN	Gord L T bia Lt USN
Henry E Goetz Lt USN	Law E Traband Lt USN
Frank A Hamilt Jr Lt USN	R chard H Trape II Lt USN
Ge g R Hart Lt USN	Th mas W Turn r Lt USN
Ge R Hay Lt USN	Law c L W shburn Maj USA
Donald G H lgt Lt USN	J h B W th Lt USN
William N Hill J Lt USN	J ck C. W tms Lt USN
William K H w rd Maj USA	J hn G Wil Lt USN
J hn C. Huff Lt USN	R chard W Wingt ld Lt USN
William A J m n, Lt USN	R b tt L Wolf Lt USN
Arthur J J hus Lt USN	Maat W lfs n II Lt USN
R old J J Lt USN	

Dental Corps

J b H Abercromb Capt. USAF	J ck Radnet Lt USN
J h A Babett Capt USAF	Raymo d C. B n Cap USAF

Dental Corps—Continued

J b H B l Maj USA	Rod y W Ma h Cap USAF
Go d l l B k l l L USN	Go d K Mag us L USN
J me J Bour Capt USAF	Arthur F Mhl Capt USAF
Seym ur L B w L USN	K h Ma hall Capt USAF
Mart M B w L USN	En l L Ma J Cap USAF
Hlow d B gg Cap USAF	R hard A M l h Lt USN
F d W B ne Cap USAF	R b r W M d l L USN
Donald J Bur Capt USAF	Donald C. Mey Cap USAF
Th ma C Chin L USN	Th ma O M l Capt USAF
E J Coll ng Cap USAF	W d l E M g m ry Lt USN
V E Coll ns Maj USA	Ira M N d ma Cap USAF
William l Conrad Cap USAF	Donald W Ourada Cap USAF
Th A Cr mart L USN	M l P l Cap USAF
J me A Cr Capt USAF	J ph P l k Cap USAF
R b t P Dabma Cap USAF	Fra k J P Hlz Lt USN
R be H Evans Jr Cap USAF	J h W Ph l l pp L USN
R ym od W S E Cap USAF	Th ma R P r b Cap USAF
Edw d L F l Cap USAF	R ha d L P ur au, Cap USAF
Th ma D Fl ur Cap USAF	Gl J P Cap USAF
W lla d L Fl Cap USAF	J h F P p Cap USAF
Ca l H F bo Cap USAF	Albert Rapp p rt L USN
S d y A Ge Cap USAF	D nald K R Lt USN
Ha ld N Gla L USN	Mo W R Cap USAF
J b D Gl ma Cap USAF	B E Schiff s Cap USAF
Edw C. Gord Cap USAF	Cha l R Seh ld Maj USA
Edwa d G Caps USAF	Murray S bw rt Cap USAF
And w J lla Cap USAF	Edm od L Se y Cap USAF
R bert M Hall L USN	Edw d J Se l k Cap USAF
G s A Hal w s Cap USAF	Ge s B S d f d Capt USAF
R hard P Ha L USN	R b rt W Sla L USN
Dye D Ha L USN	Edw D S yd Cap USAF
J na W Hockma J Cap USAF	J h B S w L USN
Cha l G Hod L USN	Du d S k l Cap USAF
Ph l p J H l L USN	D nald C S l Cap USAF
N bert L Imm l L USN	Al L S be s j L USN
Buc D J L USN	J h A S bel Cap USAF
J l A Kal t Cap USAF	Cha l R S l l va L USN
J me K lly Cap USAF	Dnol m T l ey Capt USAF
J h G Koehl Cap USAF	En l T T ep Cap USAF
E gene M h val Cap USAF	Il um B T Cap USAF
J m M La sch Cap USAF	Edg G Timm Cap USAF
J h J La ll J L USN	F L Turne Cap USAF
R be K Law L USN	J h F Tyl k L USN
Edwa d M Law L USN	Rodney F V l L USN
L us J Lod J Cap USAF	J ph R P W l l J L USN
l la ld L w hal L USN	H ary S W L USN
Ralph W Lucia L USN	Law nc A W l b g L USN
Ir ng R L m J Cap USAF	My S W ne Cap USAF
J me J Ly ns L USN	

Medical Service Corps

l la ld R Bow L USN	Ame g J Ch b Maj USA
L l G Bow rs l L USAF	N d B Curtis L USN
Cl a k M Brand l L USA	Ge M D l L USAF
D L Br gg L USN	R bert M Edw d l L USAF
J b P Cha l L USN	W lla d B F h Cap USAF

Medical Service Corps—Continued

Marvin B Flaherty 1st Lt USAF
 William C Ford Maj USAF
 Jacob R Foma Maj USA
 Edward Ha Jr 1st Lt USAF
 Philip E Hixson 1st Lt USAF
 Hilbert J Hippert 1st Lt USAF
 Lewis R Kaufman Lt USN
 William R Kowal Capt USA
 Keith C Krug 1st Lt USAF
 Donald V McEvoy 1st Lt USA
 Daniel J Monahan 1st Lt USAF
 Charles G Myers 1st Lt USAF
 Maurice W Nichol Maj USA
 Raymond J O'Brien Maj USA
 Schuyler C Patrick 1st Lt USAF
 Solomon C Pfeiffer Lt USN

James J Riccard Maj USA
 James T Richard Col USA
 William S Reay Maj USA
 John P Samuel Maj USA
 Robert W Schneider 1st Lt USAF
 Edward R Seefelt 1st Lt USAF
 Edward M Slight 1st Lt USAF
 Franklin H Snapp 1st Lt USAF
 Frank Spasato Maj USA
 Theodore Stergiad Maj USA
 Donald E Still Lt USN
 James C Strickland Maj USA
 Ralph A Trimble 1st Lt USAF
 Robert E Tuttle 1st Lt USAF
 Howard Wills Maj USA
 Richard H Zyzanski 1st Lt USAF

Nurse Corps

Twila R Adams 1st Lt USAF
 Carolyn T Anderson 1st Lt USAF
 Viola L Adus Lt USN
 Elsie M Armstrong Capt USAF
 Gertrude Ase 1st Lt USAF
 Helen C Bailey Capt USAF
 Marilyn J Bamber 1st Lt USAF
 Calpe M Belz Lt USN
 Margaret E Bertold Capt USAF
 Joan M Berrens 1st Lt USAF
 Elizabeth A Burr 1st Lt USAF
 Janet L Bess 1st Lt USAF
 Delores L Brown 1st Lt USAF
 Claudia S Byrd Lt USN
 Barbara J Carpenter Lt USN
 Marie F Christack Lt USN
 Kathleen P Cilma 1st Lt USAF
 Anna B Co Lt USN
 Amelia M Dalmao Lt USN
 Martha A Deeks Capt USAF
 Alice L Downing 1st Lt USAF
 Ellen E Dink Lt USN
 Annabell W Evans Capt USAF
 Elizabeth L Eva Lt USN
 Florence F Fack Maj USAF
 Mildred A Fack Capt USAF
 Helen M Girard Maj USAF
 Catherine M. Gily Lt USN
 Eleanor F Gravill Capt USAF
 Albina I Galt Lt USN
 Aldona M Grez Lt USN
 Elea T Hall Lt USN
 Dorothy J Hans Lt USN
 Margaret C Hoffman Capt USAF
 Hazel L Hagan Lt USN
 Aileen R Hottel 1st Lt USAF
 Hester E Himm 1st Lt USAF
 Elizabeth A Johnson by Capt USAF

Kathleen V Kennedy Capt USAF
 Rosa A Kibler Lt USN
 Barbara E Knapp 1st Lt USAF
 Pauline J Knez Lt USN
 Kathleen M Laughlin Lt USN
 Geraldine M Lohan 1st Lt USAF
 Barbara J Longwell 1st Lt USAF
 Gladys Madson Lt USN
 Doloris M McAlister 1st Lt USAF
 Mayd M McKay Capt USAF
 Ida J Noe 1st Lt USAF
 Mary G O'Donnell 1st Lt USAF
 Norma E Parn 1st Lt USAF
 Irene A Parnell 1st Lt USAF
 Leta V Peter 1st Lt USAF
 Norma J Pittuz 1st Lt USAF
 Mary R Phillips 1st Lt USAF
 Ruth M Polky Lt USN
 Constance A Quinn 1st Lt USAF
 Johnna Ridd Lt USN
 Elizabeth A Richard Lt USN
 Dorothy A Ruffo Lt USN
 Martha C. Ryan Capt USAF
 Catherine R. Ryan Lt USN
 Dorothy L Schwager Lt USN
 Janet Seals 1st Lt USAF
 Mary S Stelman Lt USN
 Mary G Stewart Lt USN
 Anna B Strank Lt USN
 Jean P Tarr 1st Lt USAF
 Ula E F Trapp Lt USN
 Mable E Ware Lt USN
 Dorothy V Wetzell Capt USAF
 Laura C Wheeler Lt USN
 Judith E Williamson Capt USAF
 Blanche E Wodka 1st Lt USAF
 Rita G Wburgh 1st Lt USAF

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NEW NAVAL HOSPITAL ON GUAM

On 2 November 1954 the new 14 5 million dollar U S Naval Hospital on Guam Marianas Islands was dedicated Situated on a 137 acre plot on Agana Heights this beautiful ultra modern hospital has facilities for 500 beds The staff consisting of 68 officers 218 enlisted men and 100 civilians furnishes complete medical surgical and



dental care to military personnel dependents and fleet activities Over 160 miles of wire and 38 000 tons of concrete were used in construction This new medical facility is the second largest naval installation outside the Continental United States

Quite as a sidelight to the construction of the Naval Hospital was the setting of a lock safe in concrete before it was found that no one had the combination After all local experts failed in opening the safe a Navy inspector sat down turned his hearing aid to full volume and dropped the tumblers by ear

People are different from one another and when they are sick they are even different from themselves

—JANET M GEISTER R N
in R N p 45 June 1955

BOOKS

Reviews of Recent Books

ANTISERA TOXOIDS VACCINES AND TUBERCULINS IN PROPHYLAXIS
AND TREATMENT by H. J. Parry F. M. D. 3d ed. 227 p. g. illu-
trated. The Williams & Wilkins Co. Baltimore Md. 1954. Price \$5.

The words bacterial and virus diseases which appeared in the title of the first two editions of this small book have been deleted from the present edition. The subject matter however continues to cover the basic principles of immunology and their practical application to the treatment and prevention of disease. Throughout the text, difference in practice between Great Britain and the United States are described indicating the value of the book.

The volume is divided into three sections the first of which is devoted to serology immunity and a review of basic immunology. Brief discussions of the various types of antisera comprise the second section. Method of preparation of the stems available and the use of each in prophylaxis and treatment is presented in clear outline form. The third section comprises more than one half of the book and is devoted to a description of products available for diagnosis such as tuberculin and Schick test toxoid and also those used for active immunization against disease. Controversial material is kept to a minimum and the author's emphasis is on a practical clinical approach. For example he points out the need for using only certain syringes for each dilution of the Mantoux test because of the great difficulty in removing traces of tuberculin by usual sterilization procedures. A historical outline of dates important in serum therapy and immunizations concludes the book which can be wholeheartedly recommended to the physician in general practice and preventive medicine.—WARREN H. DIESSNER Col. MC USA

DIAGNOSTIC ADVANCES IN GASTROINTESTINAL ROENTGENOLOGY by
Arthur J. Bend F. M. D. 144 pages 75 illustrations Grun & Stratton
Inc. New York N. Y. 1954. Price \$6.

This little book is intended for those radiologists and gastroenterologists who have been performing roentgenographic examinations for several years yet are so situated that they cannot keep up with new techniques and modern interpretations of roentgen findings. The author covers advances in roentgenologic equipment and preparation of contrast media. He gives considerable emphasis to detailed study of the mucosa particularly the club soda technique which was developed by the author. This utilizes small amounts of carbonated water for hyperperistalsis and distention of the stomach.

The material is well organized concise and readable. Examination of the various portions of the gastrointestinal tract is covered to some

detail Both sides of controversial points are not reviewed in detail, but rather the author gives his own opinions based on years of experience

The book is well indexed and beautifully illustrated with 75 roentgenograms which bring out the points emphasized in the text Bibliographic references have been generally omitted in order not to increase the size of the book —*JOHN L. HATCH, Capt. (MC) USN*

A COMPREHENSIVE REVIEW OF DENTISTRY For Use in Preparing for State Board Licensing Examinations edited by Vincent R. Trapazano D D S F A D P with the collaboration of 24 contributors 2d edition 665 pages W B Saunders Co Philadelphia Pa 1955

This volume is presented with a twofold purpose first to serve as a guide for the Dental State Board examinee and second to aid in the review of dentistry by the general practitioner

All of the basic sciences of the dental curriculum are covered including operative dentistry prosthodontics oral surgery orthodontics roentgenology and related topics The material is arranged in a question and answer format without detailed descriptions of technical procedures Each chapter has been compiled by a recognized specialist in the field and there is a short bibliography at the end of each chapter The material is well indexed

The author's twofold objectives are adequately accomplished and within the limitations of these objectives this book can be recommended as an addition to the library of a prospective examinee or general practitioner —*EDWIN H. SMITH, J. LL. Col. DC USA*

COLLECTED PAPERS OF THE MAYO CLINIC and The Mayo Foundation edited by Richard M. Hewitt M A M D A B Nevling M D John R. Mine S D James R. Eckman M A Ph D M. Katherine Smith B A Cal M. Gambill M D M P H Florence Schmidt B S E and George G. Stilw. II M D Volume XLV 1953 published June 1954 913 pages illustrated W B Saunders Co Philadelphia Pa 1954

Practical useful knowledge given in succinct readily understandable prose describes the style in which this 913 page volume is written This book reads like the best of clinical lectures Statistics are held to a minimum and individual case records do not appear Problems are posed on every textual page their number making the book a small encyclopedia of up-to-date freshness Problems even out of the average practitioner's field are presented without going over his head

This is a book the busy physician may read hurriedly between cases or digest more thoroughly and with comfort at the day's end The editors have quite uniformly captured in print a style of presentation of problems characteristic of the direct analytic approach of the best clinics New unusual difficult or even ordinary problems are so interestingly presented as to make their solution seem easier for having read this text —*WILLIAM W. KIRK, Capt. (MC) USN*

ANGIOGRAPHIC LOCALIZATION OF INTRACRANIAL MASSES by *Athur Eck M O Ph O d P I A R m b id M D* 433 pag
 Il trat d Ch l C Thom Publi h Spr g f ld Ill 1955 P
 \$13 50

This monograph is designed to serve as a much needed reference atlas for the localization of intracranial masses by the study of the displacement of the cerebral vessels as seen in the contrast angiogram.

It is divided into two parts the first being composed of line drawings and general description of the material or noting the reader to the position of vessels when displaced by masses in 27 specific regions of the brain. The second part consists of 27 chapters each illustrating one of these regions by angiograms. Also presented are correlating clinical histories additional illustrations photographs of patients plain films pneumograms and pictures of surgical exposures and of pathologic specimens.

The ability to localize intracranial masses can be greatly enhanced by the study of angiography. Its correlation with the clinical and pneumographic studies is especially important and is well illustrated in this book. By its use certain herniations can be excluded and subsequent pneumography and lumbar puncture may be performed with greater safety. Information may also be gained preoperatively by the neurosurgeon serving to localize the tumor more accurately. In addition times a clearly inoperable tumor may be recognized.

This book is a valuable addition to our growing reference library in the highly specialized but important field of contrast radiography. It is recommended for all who would extend their knowledge in this direction.

—S F WILLIAMS Capt MC USN

REFLECTIONS ON RENAL FUNCTION by *James R Roberson M D Ph D*
 163 page Il trat d Ch l C Thom Publi h Spr g f ld Ill
 1954 P c \$3 50

This small book emphasizes the normal physiology of the kidney and gives a summary of known physiologic chemical and endocrine principles involved in renal function. There is a splendid bibliography of 112 references.

A chapter is devoted to water and sodium excretion and an explanation of how the kidney elaborates hypertonic and hypotonic urine. The role of the kidney in acid base balance is covered in detail with discussion of how and when the urine is alkaline or acid. The role of the kidney as a regulator of the volume of the body fluids is carefully described. A great deal of information is centered on the kinetics and limitations of the kidney but many secrets of its intimate mechanisms are yet to be revealed.

This book will be useful to physiologists physicians interested in basic sciences and residents in training in urology.

—EARL C LOWRY Col MC USA

LEGG-CALVÉ PERTHES SYNDROME and Related Osteochondroses of Youth
by *Charles Weer Goff* M D 332 pages illustrated Charles C Thomas
Publisher Springfield Ill 1954 Price \$10 75

The author has successfully written a monograph summarizing all present day knowledge of a clinical condition challenging to the physician and a rather common cause of residual disability in the adult. He also has faithfully and scientifically recorded his own experiences in the treatment of this condition and proposes a concrete plan for treating osteochondrosis with criteria of healing which will be helpful to other physicians.

The first portion of the book records the history of Legg Calvé-Perthes syndrome with an account of the nature possible causes clinical manifestations and treatment of this condition. In a section on the hip the normal and abnormal physiology of this joint and the pathology of this ill defined disease is described. A portion of the book devoted to excellent reproductions of roentgenograms clearly illustrate typical cases. These are compared with roentgenograms of conditions which simulate Legg-Calvé-Perthes disease and will be of help in their differential diagnosis. Of interest is the tabulation of osteochondroses of various portions of the skeleton where confusion in diagnosis has existed.

Many references are listed which will assist those desiring to do further reading on the subject. All illustrations graphs and reproductions are excellent. The index is complete with bold print designating each letter of the alphabet.

This work representing exhaustive research and scientific recording will be an asset to the physician especially the pediatrician and orthopedist treating patients with these conditions. This effort should aid an earlier diagnosis and prevention of deformities. It will give physicians a clearer understanding of a plan for treatment which has heretofore been confusing and varied. —ALFRED O HELDOBLER, *Major MC USA*

INTELLIGENCE by *L J Bischof* 33 page illustrated Doubleday and Co
Inc Garden City N Y June 1954 Price \$0 85

Since the first practical success by Alfred Binet in the measurement of intelligence the notion of what is and what can be measured by tests has had considerable development and modification. This pamphlet reviews the theories associated with the names of Stern Spearman, Thomson Thorndike and Thurstone. What is measured by tests of primary mental abilities is illustrated by copious examples of the sorts of tasks and problems included in the recent intelligence tests. The abilities assessed such as word fluency verbal meaning perceptual speed space and memory are defined with actual examples from tests. This work includes little for the psychologist that is new but is recommended reading for the medical or line officer who has interest in or responsibility for assessment programs.

—WALTER L WILKINS *Comdr (MSC) USNR*

THE JOINTS OF THE EXTREMITIES A R d graph c Study N te on N n
 t M thod Non ti Id d L -c mm P th l gy by
 R ymo d W Lew M D 108 pag ll trated Ch l C Th m
 P bl h r Sp gf ld ill 1955 P \$8 50

This text was prepared especially for radiologists and orthopedic surgeons. No attempt was made to cover the fundamentals of x-ray diagnosis completely in stead unusual ideas and less common diseases stressed. Nonroutine positions are described and examples given to show their value.

The author believes that complete examination of the plain film using various projections will enable one to detect small deviations from the normal. Throughout the text he urges the detailed study of the soft tissues about the various joints. Routine films taken for bone detail are usually satisfactory for soft tissue study with use of a spot light. The chapter on the knee is the most detailed one and well illustrates the importance of careful examination of the soft tissues on all films. Excellent examples of synovitis, cellulitis, pigmented villonodular synovitis and synoviom are shown.

The book is well written and easy to read with 102 illustrations of radiographs to illustrate the text. Most of these are accompanied by drawings or sketches to illustrate the anatomy and pathology. The index adequately covers the subject matter.

This study should prove valuable to all physicians concerned with interpretation of radiographs of the joints.

—JOHN M. KOHL, Maj, USAF (MC)

ANTIMICROBIAL THERAPY IN MEDICAL PRACTICE by H m n F Fl pp
 M D F A C P nd G org M E b g D S 304 p g ll
 tabl d th few d F A Da C Ph l d lph P 1955
 P \$5

This volume contains a thorough and practical coverage of antimicrobial therapy. It is a timely book which is remarkably up to date in a field that is notable for rapid developments. The authors, eminently qualified by virtue of vast clinical experience to evaluate the numerous antimicrobial agents that have come into clinical use since the advent of this form of therapy.

The many antimicrobial drugs are individually discussed as to mode of action, pharmacology, dosage, toxicology, therapeutic indications, and contraindications. The laboratory aspects and complications of antimicrobial therapy are presented briefly but adequately.

The greater portion of the book is devoted to the treatment of specific infectious diseases. The various antimicrobial agents used in each of these conditions are discussed clearly and in detail. The authors have succeeded in crystallizing current thinking regarding the relative value of the agents in the various infectious diseases and have produced a practical book that should be most useful in the everyday practice of medicine. —GEORGE M. POTELL, Col, MC USA

METABOLIC INTERRELATIONS WITH SPECIAL REFERENCE TO CALCIUM
 edited by *Edward C Reifsenstein Jr* 386 pages illustrated Sponsored
 by Josiah Macy Jr Foundation New York N Y 1954 Printed by
 Progress Associates Inc Caldwell N J Price \$5

This book reports another Josiah Macy Jr Foundation Conference designed to assemble outstanding medical investigators for the purpose of informally integrating their personal ideas experiences data and methods in the field of medicine On this occasion the subject of calcium phosphorus metabolism was chosen to further knowledge in metabolic interrelations

Twenty seven participants presented papers dealing with general aspects of internal transport of the mineral ions concerned with calcified tissues Biochemical and physiologic aspects of calcium phosphorus metabolism in research as well as in human diseases of the skeleton are correlated by informal participation of the many members The significance of calcium phosphorus vitamin D parathormone, citrate tenal function and chelating agents in the pathophysiology of diseases of the skeleton are discussed bringing up to date the metabolic interrelationship of these mineral ions with disease of bone The book is freely documented with tables graphs, diagrams, and photomicrographs of bone

This publication is an up-to-date review of the metabolic aspect of calcium metabolism as related to disease of bone It will be best utilized by the internist endocrinologist and orthopedic surgeon

—ANTON ZIKMUND Capt (MC) USN

ABDOMINAL OPERATIONS by *Rodney Mangot F R C S* with contribution by 24 American and British Authorities 3d edition 1500 page 1594 illustrations on 738 figures 11 color plates Appleton Century-Crofts Inc New York N Y 1955 Price \$24 50

In this new edition of a standard text on surgery of the abdomen the scope of the two previous editions has been extended by the addition of 11 new chapters while 63 have been revised Adequate and annotated descriptions are given of abdominal operations of general surgery including seven chapters on special subjects such as diaphragmatic hernia portal hypertension pelvic exenteration chest complications, and fluid balance

Contributions in various fields by American and British authorities lend additional value to this work Illustrations of technic are numerous and precise Discussions of biliary and gastric surgery are excellent in their coverage and the malformations and congenital anomalies often encountered in general surgery have been included

An ample author index and subject index are provided The extensive and current bibliography appears as part of the text and does not contribute to a smooth style but presents readily available references for wider reading The volume is organized well and written concisely It will be a valuable aid to the experienced as well as to the less experienced surgeon.—ROBERT L. RHEA J Col MC USA

STANDARD METHODS FOR THE EXAMINATION OF WATER SEWAGE AND INDUSTRIAL WASTES published jointly by American Public Health Association American Water Works Association Federal Sewage & Industrial Waste Association 10th edition 522 pages illustrated Publication Office American Public Health Association 1215 I c N w York N Y 1935 Price \$7.50

The tenth edition commemorates the fiftieth anniversary of the publication of the original volume. During the 50 years that have elapsed this book has become the standard text for civilian and military laboratories throughout the United States. The changes and additions in the present edition are more extensive than in any previous revision and there is considerable added information of particular interest to the military.

New material on the physical and chemical examination of water includes sections on correctness of analysis statistics amperometric titration and Palin methods for chlorine and Megregian-Majer and Lamar methods for fluorine. Under physical and chemical examination of sewage sections on precision and accuracy and a discussion of methods evaluation have been added in addition to the three methods for dissolved oxygen. The cyanide method for physical and chemical examination of industrial wastes is practically a new one as are spectrophotometric and photometric method for color colorimetric methods for heavy metals and the amino-nitropridine methods for phenol. For bacteriologic examinations of water the membrane filter technique has been included as a tentative procedure. There also is a new section on nuisance organisms and an additional MPN table. More explicit directions are given for collecting and examining samples for biologic examination of water sewage and sludge. 12 full pages of illustrations of organisms are now included.

This volume is a credit to the three associations concerned in its production. It is an indispensable reference for all who are engaged in examining water sewage or wastes.

—STANLEY J WEIDENKOPF Lt Col MSC USA

PSYCHOLOGY THE NURSE AND THE PATIENT by Doris M Odell M A D P M 2d edition 168 pages Philadelphia Library N w York N Y 1954 Price \$4.75

The author explains in simple language the development of personality and human behavior the relationship of mind and body and the influence of the emotions on behavior. Psychiatric disorders and their treatment with emphasis on the role of the nurse is briefly discussed.

Although this book was written for the nurse in England and some terms and titles used are peculiar to the British (e.g. sister tutor) the general content would be useful to any nurse particularly to those not trained in psychology. Avoidance of technical terms and clear explanations and format make it easy to read and understand.

—CHARLOTTE R RODEMAN Maj ANC USA

A TEXTBOOK OF NEUROLOGY by *H Houston Merritt* M D 746 pages
181 illustrations and 128 tables Lea & Febiger Philadelphia Pa
1955 Price \$12 50

This new text of neurology for medical students and practitioners places emphasis on diseases of the nervous system as a branch of internal medicine. Psychiatry and psychiatric syndromes are not considered except when mental symptoms accompany appropriate disease entities. Also omitted are the usual chapters on anatomy, physiology and examination of the nervous system because the author rightly concludes that these subjects require special texts for adequate coverage. In common with other volumes on clinical neurology the various disease categories are grouped in chapters according to etiology or pathology.

Perhaps the most unique feature of this text lies in the author's effort to record factual information regarding this or that disease syndrome with little attention paid to theoretic concepts regarding etiology, pathology or treatment. The author gives in concise, nontechnical terminology the current knowledge in neurologic medicine and clearly distinguishes between time tested facts, controversial data and unproved assumptions. Throughout the text are frank statements such as "The headaches which occur in patients with intracranial tumors cannot be differentiated either by their nature or their location from headaches due to other causes." Special attention is paid to the more common neurologic diseases such as migraine, epilepsy, cerebrovascular disorders, infections of the nervous system and metabolic and endocrine disturbances with relatively little space devoted to the classical neurologic syndromes which are rarely encountered by the internist or general practitioner.

A brief but adequate bibliography follows the discussion of each disease entity and there is a comprehensive index of more than 50 pages. This work admirably fulfills the goals set forth by its author, namely a text of neurology for medical students and physicians. Because of its forthright style and clarity of presentation it is also recommended to internists and psychiatrists as a superior single reference volume in clinical neurology.—ALBERT J GLASS Col. MC USA

PATHOLOGY by *Peter A Herbut* M D 1 227 pages 1 378 illustrations on 651 figures and 6 color plates Lea & Febiger Philadelphia Pa
1955 Price \$16

This textbook of pathology is written primarily for the student. It will be of great value to undergraduate students and yet is comprehensive enough to meet the more exacting demands of postgraduates.

The book is organized along classical lines with the first seven chapters devoted to general consideration of pathologic processes. Chapter 2 is unique among current textbooks of pathology in that it deals with the performance of an autopsy and contains handy tables of organ weights and measurements. Remaining chapters are concerned

with organs, organ systems and the diseases of each. The chapter on the central nervous system is written by Bernard J. Alpers.

The text is up to date and there is an excellent bibliography at the end of each chapter. There are 1,378 black and white illustrations well selected to bring out the essential pathologic features. Six color plates which leave something to be desired as to quality nevertheless serve to illustrate the major features with which they are concerned. The style of the text is simple, straightforward and easily understood. The type is large and easy to read and extensive use is made of italics to emphasize key words. The candid and somewhat pedagogic presentation of the material may not appeal to those desiring elaboration of controversial issues. With the busy student who will welcome this clear, concise and comprehensive presentation of human pathology however, it will strike a responsive chord.

—FRANK M. TOWNSEND Lt. Col. USAF (MC)

MEDICAL STUDENTS AND MEDICAL SCIENCES. Second Edition. Edited by I. B. Talbot, United States, and D. C. S. La M. A. M. D. Oxford. Medical Publications, 154 pages. G. H. Cumberlege, Oxford, U.K. Printed in New York, N.Y., 1955. Price \$5.75.

This well-written, concise monograph provides an interesting comparison of medical students and of the educational aspects of medical education in the United States and Great Britain. While the comparison for the most part is based on subjective impressions rather than on an objective factual study, it nevertheless is valuable inasmuch as relatively few people have had the opportunity to observe the operation of medical schools in both countries.

Question may be raised as to the validity of the concepts gained in the author's relatively brief contact with 12 American medical schools. His prolonged contact with medical education and medical students in the British Isles lends considerably more weight to his opinions regarding medical education and medical students in that area.

This book presents much of the current concepts that are prevalent in medical educational circles today. Some new ideas are presented and older, more accepted ideas are presented in a new context. The difficulties involved in evaluating the applicants to medical school in order to select those who will make the best physicians and the problems in evaluating a student's progress in medical school are well pointed out. In this connection the commendable British plan of having an examiner from outside of the medical school to assist in the examination of medical students is described. One of the subjects that is presented particularly well is the development of the teacher.

This book as a whole is interesting and informative. It will make worthwhile and entertaining reading for any medical educator.

—CHARLES L. LEEDHAM, Col. MC USA

PROTOZOOLOGY by *Richard R. Kudo* D Sc 4th edition 968 pages with 36 illustrations Charles C Thomas Publisher Springfield Ill 1954 Price \$10 75

This textbook was first published in 1931 under the title *Handbook of Protozoology*. Subsequent revisions of which this is the third have incorporated a continuously expanding subject matter and have been entitled *Protozoology*. This edition is now more than twice the size of the first. There has been no change in aim, the book being addressed to seniors and graduates in zoology in colleges and universities.

The field of protozoology has now grown to such an extent that it is no longer possible to give full discussion of all of its phases in one volume. As in the first three editions, the emphasis is upon taxonomy. The essentials of morphology and life history are given for practically all genera. There is a listing of the better known species accompanied by excellent illustrations. The field is so extensive, however, that the descriptions of most species have been compressed into a form so succinct as to be of limited usefulness. In spite of this fact, the taxonomic portion of the book is anything but dull and uninteresting. The typography, organization, and illustrations should make it possible for the student to determine fairly closely an unknown protozoan from any taxonomic group. However, since protozoa are of interest chiefly because of what they do, one may wish that in a text of this nature more emphasis had been placed upon these phases of their study, even at the expense of omitting taxonomic consideration of some of the groups. In its present form, the book comes nearer to being a textbook of general protozoology than any previous edition.

—CLAY G. HUFF

POTASSIUM METABOLISM IN HEALTH AND DISEASE by *Howard L. Holley* M D and *Harne W. Carlson* Ph D 131 pages illustrated Grune & Stratton Inc New York N Y 1955 Price \$4 50

This little book of 93 text pages contains a good summary of normal and abnormal potassium metabolism. As the preface states, the purpose of the monograph is to serve as a practical clinical guide to the diagnosis and treatment of alterations in the metabolism of this electrolyte. In general, this purpose appears to have been achieved, although at times the brevity of some sections (particularly on therapy) is regrettable.

Not everyone will agree with the recommendation that calcium gluconate administered intravenously should be listed first in the emergency treatment of hyperkalemia. Furthermore, a fuller discussion of the differential diagnosis of the clinical states associated with hypo- and hyperkalemia would have been helpful. The appendix dealing with the potassium content of foods and municipal water supplies is valuable. Much of the material, of course, appears in larger texts on metabolism. Nevertheless, as a brief review of the essentials of an important subject, this book will prove useful.

—S. O. WAIFE, LL (MC) USN

HEMATOLOGY by Cyrus C. St. E. M. D. 2d ed. 1222 pag. 77 figs.
 42 tables. 9 plates. in 1. Ch. 1. C. Th. m. P. bl. b.
 Spr. gf. ld. Ill. 1955 P. c. \$19.50

The objective of the author in this general reference type of text book is to correlate laboratory data in the field of hematology with information derived from clinical examination of the patient. Emphasis is given properly to the historical aspects of hematology to enable the reader to understand the development of advances. Furthermore, this approach is found to be innately interesting. This fact in itself makes the text well worth reading.

In this second edition published five years after the first material has been added on vitamin B, the folic acid antagonists, TEM, and nitrogen mustard, the steroids, splenectomy, and the significance of drugs in the etiology of hemologic disorders. An excellent bibliography is presented at the end of each chapter. The author's comments based on extensive experience add spice to the reading. The book is quite comprehensive and shows a fluidity of integrated thought that is pleasing to the reader. The author points out that to keep up to date the text would have to be revised every few months; however, the established facts are presented. Each given subject succeeds the other in almost encyclopedic, informative, enjoyable form.

Thus this book makes an excellent reference for the medical student and general practitioner and should be made a standby by the internist.

—ARCHIE A. JOFFMAN, C. L. USAF (MC)

THE SUBNORMAL MIND by S. Cyril B. i. D. S. II. L. i. D. II. LL. D.
 3d ed. U. ry. I. L. d. II. th. Cl. rk. L. nur. 1933 d. l. d.
 t. Th. L. ndon. S. h. ol. I. llyg. d. T. p. I. M. d. c. 391 p. gr.
 Oxf. d. U. rs. y. P. N. w. Y. k. N. Y. 1955 P. \$5

This book is directed to educators, physicians, clinical psychologists, and laymen who are concerned with the psychological problems of subnormal school children.

The author's lucid style of writing lends itself well to the simple organization of the book. The first chapter presents his theory of personality. Subsequent chapters apply this theoretic system to the etiology, diagnosis, and treatment of mental deficiency, delinquency, intellectual dullness, and neurosis. A closing chapter is devoted to a discussion of the incidence of these problems in England as well as a discussion of a review of methods and psychological tests.

The theory of personality is essentially a biologic theory resting on a proposed inherited set of instincts and reflecting the English faculty psychology of the 1920's. Although the numerous case studies make use of the author's sensitive clinical intuition and perceptiveness, the sections on treatment are restricted by the theoretic emphasis on inheritance of instincts. If, for example, much juvenile delinquency is simply an automatic outburst of some inherited mode of response, then treatment of delinquency necessarily is limited.

Although the 1935 edition of *The Subnormal Mind* was an important contribution the present edition fails to integrate subsequent advances in research methodology, projective testing, personality theory and abnormal and child psychology. The Rorschach for example is described as "but little known" in England and no mention is made of the Thematic Apperception Test. The research studies could profit from modern advances in sampling techniques and recent statistical tools. Finally there is a conspicuous absence of contemporary approaches to personality theory and psychotherapy as well as an absence of vast bodies of experimental data and discussions of mental deficiency, delinquency and neurosis.

It is the reviewer's opinion that the present contribution of this book is limited. As a guide to the treatment of subnormal school children it is overshadowed by more modern texts.

—ALVIN R. MAHRER 2d Lt. MSC USA

THE YEAR BOOK OF NEUROLOGY, PSYCHIATRY AND NEUROSURGERY (1954-1955 Year Book Series) Neurology edited by Roland P. Mackay M.D. Psychiatry edited by S. Bernard Wortis M.D. Neurosurgery edited by Percival Bailey M.D. and Oscar Sugar M.D. 619 pages 97 figures. The Year Book Publishers Inc. Chicago Ill. 1955. Price \$7.

This Year Book as in the past is an important contribution in presenting various methods of treatment, research and general trends in an objective manner. Particularly in psychiatry which comprises a discipline that is extremely un-uniform, it is imperative that comparisons be made of the multiplicity of therapeutic methods so that an exclusive philosophy of treatment or rigid creed of psychodynamics will not dominate the field to the exclusion of other methods which may very well be just as effective.

In the section on neurology, advances in infectious diseases are stressed in terms of the new antibiotics and the more frequent late complications of such diseases. Basic work in terms of anatomy and physiology focuses on the universal use and results of localization and physiologic neuronography studies. There is an excellent review of the neurologic aspects of basic metabolic dysfunction as well as the relationship of such factors to the problems of myasthenia and myopathy.

The neurosurgical section stresses some of the results and moral aspects of psychosurgical problems as well as emphasizes the diagnostic and newer ancillary anesthetic, hypotensive and hybernation techniques. The collective material encompasses all therapeutic aspects in the major fields of operative neurosurgery.

The section on psychiatry indicates that the literature in psychiatry shows five positive trends: (1) A greater interest in the sociologic and environmental factors related to mental health and illness; (2) a resurgence of interest in physiologic research; (3) an increase in psy-

chromatic studies (4) increasing interest in treatment procedures and efforts to evaluate their relative therapeutic effectiveness and (5) growing interest in child psychiatry especially of childhood schizophrenia. There is a negative trend because of the dearth of publications in newer basic dynamic conceptual material clinical psychiatry industrial psychiatry and preventive psychiatry.

The subsection on therapy includes a considerable number of articles which report the original results obtained in the use of the new drugs in the treatment of psychiatric illnesses. The editor concludes that the literature points up an urgent need for an interdisciplinary correlation of data a better understanding of biostatistical methods sober evaluation of the effectiveness of different treatment procedures more specific etiologic data and dynamic *quantitative* measurement methods.

—EMMETT B. LITTERAL, C I MC USA

THE CIBA COLLECTION OF MEDICAL ILLUSTRATIONS. Volume 2. Reproduced by Sympson, F. N. H. N. H. M. D. edited by Ernst Oppenheimer. M. D. with foreword by J. H. R. K. M. D. 286 pages. Illustrated. Published by Ciba Pharmaceutical Products, Ltd. Summit, N. J. 1954. P. \$13.

This volume is the second in a series which will portray each of the major anatomic and physiologic systems of the human body.

Doctor Netter, whose outstanding work as a medical illustrator is known to all physicians, has succeeded in compiling a distinctly valuable book on the male and female reproductive systems. Under the editorship of Doctor Ernst Oppenheimer and with texts contributed by 11 of the leaders in the field of urology, obstetrics and gynecology, this book fills a need in the teaching of many of the involved processes of reproduction.

Beginning with the first section which illustrates and describes the development of the genital tracts, the book contains four sections on the male tract and six on the female. One section each is devoted to pregnancy, the mammary gland, and the intersexes. These 14 sections completely cover the field.

The reviewer was impressed by the ease with which the excellent color illustrations could be studied while the text was being read, both illustrations and text being presented on the same page. This effective method results in the reader's retention of the picture together with the facts. The index is well arranged and subject matter is easily located. The 104 full color carefully labeled illustrations are not themselves indexed but can be located readily by subject.

Although each of the sections is significantly valuable, the section on pregnancy was read by the reviewer with the greatest interest. Judging by the highest standard reached by this volume, the medical profession can expect the succeeding volumes to contribute materially to the field of medical teaching. —MORRIS M. RUBIN, Capt. (AC) USN

THE COLON ITS NORMAL AND ABNORMAL PHYSIOLOGY AND THERAPEUTICS edited by Roy Waldo Miner 248 pages illustrated The New York Academy of Sciences New York N Y 1954 Price \$4 50

This monograph assembles under one cover the present opinions of various experts on the colon as reported at a conference held by the Section of Biology of the New York Academy of Sciences on 8 and 9 May 1953 The main theme of the volume is the intercommunication among investigators in many different fields and in this light it is highly successful

Part 1 is confined to the physiology and pharmacology of the colon in its more basic aspects One of the most interesting reports was that by Dr H A Gordon of the Notre Dame group experimenting in germ free animals They found that in these animals born and raised without bacteria the cecum is 10 to 20 times as large as in normal animals Part 2 covers the causes of colonic disorders and is primarily concerned with the psychogenic background from childhood experiences to life stress situations The differentiation in end result between the irritable bowel syndrome and true ulcerative colitis is well made in the panel discussion In part 3 abnormal colonic pharmacology is very well discussed and covers laxatives antispasmodics and steroids Part 4 is concerned with the therapeutic management of colonic disorders It points up the practical clinical use of the preceding knowledge

This is a well-organized and illustrated book and presents an exceptional bibliography at the end of each report It is a must for any doctor who attempts to treat colonic diseases

—LESTER J POPP *Comdr (MC) USN*

THE YEAR BOOK OF ORTHOPEDICS AND TRAUMATIC SURGERY (1954 1955 Year Book Series) edited by Edward L Compere M D F A C S F I C S 384 page 193 illustration The Year Book Publisher Inc Chicago Ill 1955 Price \$6

This book brings the review of orthopedic and traumatic surgery up to May 1955 As usual the text reports American and foreign literature on the subject in a concise and adequate manner The short abstracts include the basic reference at the bottom of each page so that bibliography searching is not necessary The abstracts obviously are made by a varied group of assistants and the author adds editorial notes in many instances These although not adding information express his opinion about the subject reviewed Illustrations provided when necessary to augment the text are well reproduced

This series continues to serve a useful purpose in abstract literature and saves considerable reading time for interested physicians Those who have made use of previous issues as well as those newly interested in the subject will benefit by reviewing this text

—STERLING J RITCHIEY *Col MC USA*

STUDIES ON FERTILITY I l d g pape d t th C f f th
 S ty f th Study f F r t l ty L d 1954 B g Vol m VI of
 th P d g f th S c ty Ed ted by R G H r M A D M
 151 page Il trat d Ch l C Th ma P bl h Sp gf Id Ill
 1954 P \$4.25

This little book contains 16 articles (chapters) of which only two are of any real value to the clinician. One is "The Management of Pregnancy in the Previously Infertile Woman" and the other is "The Value of Timing of Ovulation in the Treatment of Sterility." The latter paper is available from other sources.

Much of the space in the book which really should be a journal is devoted to fundamental research and is at the moment of no interest to the clinician. The book is well bound, clearly printed on good paper and should be in reference libraries.—JOHN W. SIMPSON, C I MC USA

THE CHEMISTRY OF MICRO-ORGANISMS by A th B k Ph D F R I C
 343 p g Il t t d P m P bl h g C p N w Y k N Y
 1955 P \$6

This is an exceptionally good book in a specialized field. Designed as a series of lectures for a polytechnic school in London, it is highly technical and will be little appreciated by anyone not thoroughly trained in organic chemistry.

The author treats the subject of the organisms themselves in a non-technical fashion that is somewhat misleading, for example rickettsiae are referred to as small parasitic bacteria. This approach stems from the fact that these lectures are directed at an audience with highly diversified training. On the other hand, the author is careful to point out that certain opinions that he expresses are at best on shaky ground. Few of current investigation which will perhaps necessitate a revision in our way of thinking on such subject. A typical example of this is the statement that bacteria lead completely "free" life.

The section on antibiotics is well written and the clinical limitations of certain of the antibiotics well covered, however considerable space is given over to descriptions of the synthesis and physical properties of certain antibiotics which are no longer in practical use.

The style and format are good, the text is readable (provided one has a working knowledge of structural organic chemistry) and the book is well documented with pertinent references from both American and foreign periodicals. The index provides a ready reference to any specific compound or topic.

This book should prove of value to those interested in the field of microbial physiology or antibiotic development but is not recommended for those who desire a more fundamental approach to the biochemistry of microorganisms.—DAVID F. HERSHEY, Cpt USAF (MSc)

CONNECTIONS OF THE FRONTAL CORTEX OF THE MONKEY by Wendell J S Krieg 299 pages Charles C Thomas Publisher Springfield Ill 1954 Price \$10 50

This book presents a detailed analysis of data relative to studies on the connections of the frontal cortex of the monkey The author has made and recorded the observations on 70 spaced cortical lesions and by the Marchi impregnation method has traced the myelinated corticofugal fibers to their termination and position within the white matter

The book is not a text but provides an integrated account of the frontal cortex as a further aid to a better understanding of the functional role of this part of the brain Certainly the best use of this book will be made by students of cyto-architectonics and physiologic neuroanatomy In its current form it will have little appeal to the average clinician and is primarily intended for those specialists engaged in investigations of cortical neuroanatomy and neurophysiology

—CHARLES N LUTTRELL J Lt (MC) USNR

REACTIONS WITH DRUG THERAPY by Harry L Alexander M D 301 pages illustrated W B Saunders Co Philadelphia Pa 1955

This book meets the requirements for a comprehensive reference book for the internist and allergist and also for any physician or surgeon who uses many antibiotics and other medicines in his professional practice As the author states hundreds of thousands of substances have been employed as drugs yet only a thousand or less are in common use Probably every practicing physician and surgeon has some time or other seen a "reaction to some drug they have prescribed for their patients The discussion of reactions to drugs is limited to those of hypersensitivity" and does not include those due to poisoning from over dosage or to expected pharmacologic reactions

The format of this book is excellent in that the author presents the mechanisms of drug reactions generally then the various forms of dermatologic manifestations followed by the more serious systemic patterns The drugs are classified as anti-infectious medications antiarthritic medications drugs used in cardiovascular disorders sedative drugs antithyroid drugs antihistamines organ extracts vitamins serums and vaccines plant products local anesthetics and finally a chapter on miscellaneous drugs The author has compiled his data from hundreds of references which are listed at the end of each chapter as well as from his own many years of experience

The book includes several tables showing drugs that induce the many forms of hypersensitivity reactions This includes such medicines as sulfonamides which produce at least 15 out of 16 types of reactions and is closely followed by the mercurials penicillin iodides arsenicals and gold salts The author's description on systemic reactions is very clear and includes appropriate forms of treatment The chapter on serums and vaccines is especially good and is im

portant for the modern day physician to read for general knowledge of the reactions with drugs even though serums and vaccines are not in use as widely as before the days of our numerous antibiotics. A reviewer of this book has difficulty in finding any errors but it may be worthwhile to note that under the listing of drugs used in cardiovascular disorders no mention is made of the dermatologic hypersensitivity manifestations occasionally seen with the use of dicumarol. This is not too common but could be included for the sake of completeness.

I believe this is an excellent book for which there has been a great demand by general practitioner as well as specialists of all branches.

—URIO R. MERIKANGAS, C I MC USA

FREEDOM FROM FEAR by L. C. Coleman, M D 285 pag. H. w. B. kn. In N. w. York N. Y. 1954 P. \$3.95

This book was written for popular consumption by a well known otolaryngologist who has been interested for many years in the psychosomatic aspects of his practice. It is concerned with the increasingly important problem of the instigation and perpetuation of emotional and physical illness by fear and anxiety. Dr. Coleman says many things that should be said often and he says them interestingly and with a wealth of appropriate illustration. In handling his theme he shows more sophistication and balance than are seen in many similar popularizations.

All of the chapters except one seem addressed primarily to the lay public (although many doctors could profit from a reading of the entire volume). This one chapter which is the finest and most useful chapter in the book is concerned with the psychological preparation of the child for surgery. It should be required reading for all surgeons and nurses in hospitals. In other chapters the book does not entirely escape the pitfalls of oversimplification, scientific half truths and the over optimistic assumptions associated with most attempts at popularizations of psychological subjects. There also are occasional lapses into facile writing and vague phrasing. Furthermore the jacket blurb is misleading in its statement that the book is a practical guide to self understanding and the conquest of fear. This statement seems more a reflection of the publisher's ideas of what is necessary to sell a book of this kind than of Doctor Coleman's own intent.

With all its limitations inherent and otherwise this is a good book of its type. I hope that it has a wide circulation not because it is of any immediate practical value to the person suffering the effects of fear and anxiety who happens to read it but because such books may add a tiny bit to the sum total of our culture's consciousness of the invidious influence of these affects on human efficiency and happiness. —CHARLES S. MULLIN, *Comdr (MC) USN*

New Books Received

Books received by the *U S Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be selected for review in a later issue.

- PRACTICAL ORAL SURGERY** by *Henry B Clark, Jr* M O D O S 392 pages 223 illustrations Lea & Febiger Philadelphia Pa 1955 Price \$8 50
- DIFFERENTIAL DIAGNOSIS** The Interpretation of Clinical Evidence by *A McGehee Harvey* M D and *James Bordley III* M D 665 pages W B Saunders Co Philadelphia Pa 1955
- THE PRACTICE OF DYNAMIC PSYCHIATRY** by *Jules H Masserman* M D 790 pages W B Saunders Co Philadelphia Pa 1955
- KINESIOLOGY** by *Katharin F Wells* Ph D 2d edition 516 pages illustrated W B Saunders Co Philadelphia Pa 1955
- DOCTOR AND PATIENT** by *Desmond O'Neill* M D M R C P (Lond) D P M (Eng) 197 pages J B Lippincott Co Philadelphia Pa 1955 Price \$5
- CARIOLOGY NOTEBOOK** For Preliminary Instruction in Medical Curricula Columbia University College of Physicians and Surgeons 97 pages illustrated Grune & Stratton Inc New York N Y 1955 Price \$2 50
- PROCEEDINGS OF THE THIRD MEDICAL CONFERENCE OF MUSCULAR DYSTROPHY ASSOCIATIONS OF AMERICA INC** October 8 and 9 1954 in New York N Y 324 pages illustrated Muscular Dystrophy Association of America Inc New York N Y 1955
- DISEASES OF THE EAR NOSE AND THROAT** by *William Wallace Morrison* M D 2d edition 756 pages illustrated Appleton-Century-Crofts Inc New York N Y 1955
- OF PUBLISHING SCIENTIFIC PAPERS** by *George E Burch* M O F A C P 40 pages illustrated Grune & Stratton Inc New York N Y 1954 Price \$2 75
- HEARING THERAPY FOR CHILDREN** by *Alice Steng* M A *Wang J Fitch* M A *L Roy D Hodgcock* Ph D *James W Phillips* M D and *James A Carrell* Ph D 371 page illustrated Grune & Stratton Inc New York N Y 1955 Price \$6 75
- BRITISH MEDICAL BULLETIN** Blood Coagulation and Thrombosis Volume XI Number 1 82 pages illustrated Published by Medical Department The British Council London April 1955 Distributed by Oxford University Press New York N Y Price \$2 75
- BRITISH MEDICAL BULLETIN** Hormone in Reproduction Volume XI Number 2 170 pages illustrated Published by Medical Department The British Council London May 1955 Distributed by Oxford University Press New York N Y Price \$2 75

PSYCHIATRY AND THE LAW The Proc ed g of th Forty Third A ual
M t g f th Am r P y h path l g l A oc ti b l d i New
York City Jun 1953 Ed t d by P I H Hock, M D d J p h Z b
Ph D 232 p ge Il tr t d Gr & St tton In N w York N Y
1955 P \$5 50

ATLAS OF ROENTGEN ANATOMY OF THE SKULL by L u E Ell M D
F A C R w th t on th R d gr phs Anat my f th T m
poral Bo by J B um F or M D F A C S d cti on
th Roe tg An tomy f th Skull th N wbor Inf t by S mu l G
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p g 239 plat Charl C Th m P bl h Spr g f ld Ill
1955 P \$14 75

RADIOGRAPHIC ATLAS OF SKELETAL DEVELOPMENT OF THE KNEE
A S d rd f R f r by S Id H Pyl Ph D d Normand L
Hoerr Ph D M D 82 pag 29 pl t Ch le C Thom Publ h
Spr g f ld Ill 1955 P \$4 25

BLOOD SUPPLY AND ANATOMY OF THE UPPER ABDOMINAL ORGANS
W th D pu Atl by N bol A M b l s M A D Sc (L uv)
581 pag 172 Il r t l dng 166 for J B L pp cott C
Phil delph P 1955 P \$24

NEW AND NONOFFICIAL REMEDIES 1955 Co t g De c r pti f th
A tuel s wh h d A p e d by th Co cul Pharm y d Ch m-
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Ch m t y Amer an M d l As o t 653 p g s Il tr at d J B
L pp cott Co Phil d lph P 1955 Pr \$3 35

CIBA FOUNDATION COLLOQUIA ON AGEING Volume I G l A p e t by
d f th Ciba F und t G E W Wol t holm D B E
M A M B B Ch nd Marg t P Cam M A A B L S 268
p g 38 Il t L cl B w & C B r M 1955
P \$6 75

THE VISUAL FIELDS A St dy f th Appl f Qua t t r P m t y
t th An tomy d P h l g y f th V ual P thw y by Bod Hugh
M B B S (L nd y Cil M (Burm) F R C S (Eng) 174 pag Il
luatr ted Cha l C Th ma P bl h Sp g f ld Ill 1954 Pr
\$7 25

TEXTBOOK OF HEALTHFUL LIVING by H Id S D bl M A M D
S D Sh d i 802 p g Il t t d M G w Hill Bo k C l
N w York N Y 1955 P \$6

COUGH SYNCOPE by V t J Derb M D F A C P nd Andrew
K r r J M D Am rca L ctur Sc P bl c t N 231 A M o-
ph Th Ba t D f Am L tur l m l
M d in Ed t d by R oe L Pull n A B M D F A C P 182
p g Il tr t d Cha l C Th m P bl h Sp g f ld Ill 1955
P \$4 75

INTESTINAL OBSTRUCTIONS Phy l g l P th l g l d Cl l
Co detat W h Emph n Ther py l clud g D c p t of
Op ra P edur s by Owe H W g t n, B A M D Ph D
3d d t n 838 pag Il tr t d Ch l C Th ma P bl h Sp g-
f ld Ill 1955 P \$15 50

THE DENTAL ASSISTANT dit d by Job C B er D D S M Sc 398
page Ilustr ted Th Bl k t D M Graw ll ll Book Co l
N w Y k N Y 1955 P \$7

NEW BOOKS RECEIVED

September 1955)

- PROBLEMS OF CONSCIOUSNESS** Transactions of the Fifth Conference March 22-23 and 24 1954 Princeton N J Edited by *Harold A Abramson* M D 180 pages illustrated. Sponsored by the Josiah Macy Jr Foundation New York, N Y 1955 Price \$3 50
- NEUROCHEMISTRY** The Chemical Dynamics of Brain and Nerve edited by *K A C Elliott Irvine H Page and J H Quastel* 900 pages illustrated Charles C Thomas Publisher Springfield Ill 1955 Price \$19 50
- A DICTIONARY OF TERMS IN PHARMACOLOGY AND OTHER DIVISIONS OF ECONOMIC BOTANY** by *George Macdonald Hocking* Ph D 284 pages Charles C Thomas Publisher Springfield Ill 1955 Price \$9 75
- SELECTION OF ANESTHESIA** The Physiological and Pharmacological Basis by *Job Adams* M D 327 pages illustrated Charles C Thomas Publisher Springfield Ill 1955 Price \$6 50
- SURGICAL PHYSIOLOGY OF THE ADRENAL CORTEX** by *James D Hardy* M S (Chem) M D F A C S 191 pages illustrated Charles C Thomas Publisher Springfield Ill 1955 Price \$5 75
- VIRUS AND RICKETTSIAL DISEASES** by *S P Bason* M D D Sc F R C P F R S A W Downie D Sc M D F D MacCallum B Sc M D and *C H Stuart Harris* M D F R C P 2d edition 406 pages illustrated Williams & Wilkins Co Baltimore Md 1955 Price \$6 75
- AN OUTLINE OF PRESENT DAY THORACIC SURGERY** by *Robert I Callison* M D 158 page Educational Publishers Inc St Louis Mo 1954 Price \$4 25
- THE PATHOGENESIS OF POLIOMYELITIS** by *Harold A Faber* M D 157 pages illustrated Charles C Thomas Springfield Ill 1955 Price \$5
- CLINICAL TOXICOLOGY** by *Clinton H Thienes* M D Ph D and *Thomas J Haley* Ph D 3d edition 457 pages illustrated Lea & Febiger Philadelphia Pa 1955 Price \$6 50
- ADAPTIVE HUMAN FERTILITY** by *Paul S Henshaw* Ph D 322 pages illustrated The Blakiston Div McGraw Hill Book Co New York N Y 1955 Price \$5 50
- LABORATORY IDENTIFICATION OF PATHOGENIC FUNGI SIMPLIFIED** by *Elizabeth L Hazen* Ph D and *Frank Curtis Reed* American Lecture Series Publication No 253 A Monograph in American Lectures in Tests and Techniques Edited by *Gilbert Dallorf* M D 108 pages illustrated Charles C Thomas Publisher Springfield Ill 1955 Price \$5 50
- SURGERY OF THE SMALL AND LARGE INTESTINE** A Handbook of Operative Surgery by *Charles W Mayo* M D Section of Surgery Mayo Clinic Rochester Minn Professor of Surgery Mayo Foundation Graduate School University of Minnesota 340 pages illustrated by *Russell Dak* The Year Book Publishers Inc Chicago Ill 1955 Price \$9
- THE ABNORMAL PNEUMOENCEPHALOGRAM** by *Leo M Davidoff* M D Professor and Chairman Department of Surgery of the Albert Einstein College of Medicine and Director of Surgery Bronx Municipal Hospital Center Chief of Neurosurgery Mount Sinai Hospital New York N Y and *Bernard S Epstein* M D Chief Department of Radiology The Long Branch Jewish Hospital New Hyde Park N Y 2d edition thoroughly revised 518 pages with 696 illustrations on 201 figures Lea & Febiger Philadelphia Pa 1955 Price \$12 50

CLINICAL DIAGNOSIS by *Elmer G W Keefe* Id B S A D S M O F A
C P Dpl mat f th Am Bo rd f Int l M d s Con
It g Phy i a Sect on f M d c M y o Cl d A ocia t
Pr f l M d M y F ndat for M d cal Ed cat nd
R h Graduat School U ty of Mnne ra Roch t Mu
1 611 page 135 Il trat on Appl t -C ury-Cr ft l New
York N Y 1955 Prt \$22 50

SAOILE BLOCK ANESTHESIA by *R y T P rmley* M D Am r L tur
S P bl cat on Numbe 258 A Mon graph Am ica L ctur
A th s l gy d t d by *Job Adar* M D 59 page Il rat d
Cha l C Th mas Publ h Spr gf Id Ill 1955 P ice \$2 50

TRANSPLANTATION OF TISSUES Cart lag B n F i T nd d
Mu l by *Ly d A P* M D V I m l 421 page Il tr t d
Th W ll ms & W lk s C Baltim re Md 1955 P \$13 50

TALKING WITH PATIENTS by *B B d M D* 154 page J B L pp ott
Co Ph lad lph P 1955 P \$3

INDUSTRY AND TROPICAL HEALTH II P d g f th S o d C
l l d t l C l l T p cal Il lth Sp o d by Th H
va d S bool l P bl Il lth Ap l 20-22 1954 i New Y k nd B
ton 266 pag Illustrat d P bl b d f Th l d t l C l l
Tr p cal He lth by Th H vard S bool l P bl Il lth B M
1955 P e \$10 (P l l R t \$5)

YOUTH'S OUTLOOK ON THE FUTURE A Gros N t nal St dy by *J m*
M G l l p C lby C l l ge nd *G don W Allport* lla va d Un
ty Ooub l d y Page P y b l gy DPP 15 61 page D bl
d y & C l G rd C ty N Y 1955 Pr \$0 85

INDICES OF HEAT STRESS A Scat l C mp on l Eff T mper
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Sta ty Off L d E C l 1955 P \$0 50 (tw h lls g
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FRACTURES AND JOINT INJURIES V l me Il by *S R g nald W t n-J ne*
F R C S F R A C S (Ilo) *F A C S* (II) *F R C S E*
(II) *M Ch Or h B S M B Ch B M R C S L R C P*
4th ed on l 073 pag Illustrat d *W llam & W lk ns C* Bal
m Md 1955 Pr \$22

SYSTEMIC ASSOCIATIONS AND TREATMENT OF SKIN DISEASES by *Kurt*
W ne M D 556 pag 90 Il tra ion C V M by C
St L M 1955 P \$17

PELVO-SPONDYLITIS OSSIFICANS Rh uma d or A kylos g Spondyl
by *R gra R manus* M D nd S Yd n, M D 161 pag llus
trat d Y Bonk P bl h Chicag Ill 1955 P \$8 50

KRONFELD'S HISTOPATHOLOGY OF THE TEETH d Th ur S r und g
St ctur Re is d d d ted by *P l E Boyl* D M D 4th ed t
t 535 p g 497 llustr t d Z c loe plat Le & F b g
Ph l d lph P 1955 Pr \$10

THE PREVENTION OF DISEASE IN EVERYDAY PRACTICE by *I ador Givne*
B S M O F A C S d M n *Bruger* M, Sc M O C, M F A,
C P 964 p g Il tr d The C V M by Co S Loui M 1955
Pric \$20

INSTRUCTIONS FOR AUTHORS

The *United States Armed Forces Medical Journal* is devoted to the publication of original investigations, observations and clinical experiences of interest to personnel of the medical services of the three military departments. Contributors who are affiliated with one of the military services in a commissioned, enlisted or civilian capacity should forward manuscripts to the Surgeon General of the United States Army, Navy or Air Force, Washington 25, D. C. in accordance with existing regulations. The covering letter should state that the author desires the manuscript to be given consideration for publication in this *Journal*. Other authors should send manuscripts directly to the editor. Accepted manuscripts become the property of the Armed Forces Medical Publication Agency and will not be returned.

MANUSCRIPTS

An original typewritten copy of each manuscript with wide margins on unruled paper size 8 by 10½ inches must be submitted. Carbon copies are not acceptable. All written matter including references must be double-spaced. Articles are accepted with the understanding that they are submitted solely to this *Journal* and that they will not be reprinted without the permission of the editor. A brief factual summary which is complete in itself should conclude each paper. The editors reserve the privilege of editorial modification. The senior author will be furnished with a carbon copy proof of his article prior to publication. Authors alone are responsible for the accuracy of their statements.

REFERENCES

References to published literature should be listed at the end of the article in the numerical order in which they are cited in the author's text. Care and accuracy in their preparation will expedite publication of the article. Following are correct examples of references:

Fleming A, Young M Y, Suchet J and Rowe A J E. Penicillin content of blood serum after various doses of penicillin by various routes. *Lancet* 2: 671-674, Nov 11, 1944.

Cabot R C. Pernicious and secondary anemia, chlorosis and leukemia. In Oler W (editor). *Modern Medicine*, 3d edition. Lea & Febiger, Philadelphia, Pa. 1927. Vol 5, pp 33-100.

FIGURES AND TABLES

Photographs should be black and white, unmounted and untrimmed, glossy prints, preferably not larger than 8 by 10 inches in size. If the identity of a patient is recognizable in a photograph, it must be accompanied by the patient's signed statement authorizing its publication. The magnification of photomicrographs must be stated. No marks, writing or typing should be made on the face or back of photographs. The author's name and an identifying legend may be affixed to the back of each print with paste or glue. Paper clips, pins and staples should not be used. Special care should be given to the preparation of graphs and tables. They should be drawn or printed in black ink on white paper and must be accompanied by an explanatory legend.

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Reporting Military Medicine

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CLINICOPATHOLOGIC CONFERENCE ☆ CASE REPORTS

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UNITED STATES
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WASHINGTON 1955



Monthly Message

Recently I accompanied the Vice President to a Chaplains-Parents meeting in Rochester, New York. One of the strongest addresses was given by the Jewish chaplain who had been born and educated in Russia under the old Czarist regime under the proscriptions as applied to the Jews. He told us what the United States of America meant to him.

Not infrequently I also receive letters—some from men who served in foreign armies in World War II. Now settled in this country, they write to ask if there is any way in which they can serve in the medical corps of our armed services to show their appreciation of the opportunity to live in the United States. I am therefore quoting to you one of the famous passages in the world's literature. It is from the Funeral Oration by Pericles over those who had died in war during the previous year. The date is 430 B. C., the end of the first year of the Peloponnesian War. I suggest that you substitute the United States for Athens and meditate upon the contents of this paragraph.

So and such they were—these men—worthy of their city. We who remain behind may hope to be spared their fate, but must resolve to keep the same daring spirit against the foe. It is not simply a question of estimating the advantages in theory. I could tell you a long story (and you know it as well as I do) about what is to be gained by beating the enemy back. What I would prefer is that you should fix your eyes every day on the greatness of Athens as she really is, and should fall in love with her. When you realize her greatness, then reflect that what made her great was men with a spirit of adventure—men who knew their duty, men who were ashamed to fall below a certain standard. If they ever failed in an enterprise, they made up their minds that at any rate the city should not find their courage lacking to her, and they gave to her the best contribution that they could. They gave her their lives—to her and to all of us, and for their own selves they won praises that never grow old, the most splendid of sepulchres—not the sepulchre in which their bodies are laid, but where their glory remains eternal in men's minds, always there on the right occasion to stir others to speech or to action. For famous men have the whole earth as their memorial; it is not only the inscriptions on their graves in their own country that mark them out, no, in foreign lands also.

not in any visible form but in people's hearts their memory abides and grows. It is for you to try to be like them. Make up your minds that happiness depends on being free and freedom depends on being courageous. Let there be no relaxation in face of the perils of the war. The people who have most excuse for despising death are not the wretched and unfortunate who have no hope of doing well for themselves but those who run the risk of a complete reversal in their lives and who would feel the difference most intensely if things went wrong for them. Any intelligent man would find a blemish caused by his own slackness more painful to bear than death when death comes to him unexpected in battle and in the confidence of his patriotism.

Frank B. Berry

FRANK B. BERRY M. D.

Assistant Secretary of Defense
(Health and Medical)

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Foreword

The *U t d St t A m d F re M d l J u r n l* th m d m for d a-
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FRANK B BERRY M D

A t t S tary / D / (ll lth d M d l)

MAJOR GENERAL SILAS B HAYS

Surgeo G l U t d St t Army

REAR ADMIRAL BARTHOLOMEW W HOGAN

S g G l U t d St t N y

MAJOR GENERAL DAN C OGLE

S g G l U t d St t A F

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PLASTIC SURGERY AT BROOKE ARMY HOSPITAL

BERNARD N. SODERBERG *Colonel MC USA*
HAL B. JENNINGS Jr. *Lieutenant Colonel MC USA*
JOHN H. TENERY *Lieutenant Colonel MC USA*
WILFRED T. TUMBUSCH *Lieutenant Colonel MC USA*
JAMES E. HEMPHILL *Major MC USA*
RICHARD A. WARD *Major MC USA*
WALTER E. SWITZER *Captain MC USA*

PLASTIC surgery at this center is general in character. It has been used to repair congenital and acquired defects of all body areas. Emphasis is directed, however, especially to the management of regional traumatic defects. Patients transferred to this hospital from almost all zones show excellent early wound care. Primary healing has resulted from the judicious use of the free skin graft. Much extremity tissue has been saved by this procedure. In the head and neck region preservation of soft tissue parts, coupled with early architectural fixation, has allowed the salvaging of many features. Rapid wound healing has permitted these patients to begin a program of reconstruction at an early date and has reduced the number of definitive plastic operations.

In general, reconstructive operations have not been begun until scar tissue has become soft and mobile and all peripheral tissues have returned to normal. Each surgical step has been devised to improve the results obtained by the previous operation. Areas of motion have been treated first. Operations on the nose, eye lids, oral orifice, and neck have been necessary to improve the airway, protect the eyeball from exposure and trauma, remove interference with feeding, prevent neck contractures that fix jaw positions and expose the oral area. In the repair of extremities, the flexor and circumferential lesions have received first attention.

For 1955, Army Medical Center, Fort Sam Houston, Texas. Col. Soderberg is now assigned to the U. S. Army Medical Center, APO 180, New York, N. Y.
Read before the Medical Assembly of the American United States Army at
L. H. Hannon, 23 April 1955.

THE FREE SKIN GRAFT

The free skin graft has been frequently used for definitive repairs. As a type of transplant it can be obtained in variable thicknesses up to and including all the corium. The requirements of the recipient site determine the degree of thickness of the skin graft. Thin grafts are indicated when early wound healing is desired. The thicker graft is more valuable for definitive repairs. Each thickness of graft has individual characteristics. The thinner the graft is cut the more apt it is to take. Thin grafts contract to a greater degree with healing than do thick grafts. Protective coverage of the part is proportionately decreased with the thinness of the graft. For definitive procedures the choice free graft is one that is cut about three fourths of the skin thickness. At this cutting level sufficient skin elements are left in the donor area to permit spontaneous healing. The three-quarter thickness skin graft ordinarily can be made to take perfectly *only on surgically clean recipient sites*. In the past plastic surgeons have chosen the full thickness graft for definitive plastic treatment because it offered the maximum coverage to the recipient site, contracted the least during the postoperative course, and usually offered a better color match than the thinner graft. A drawback, however, was the fact that if the graft was large the donor site had to have a split skin graft from another site to obtain closure. The three quarter thickness skin graft has now proved definitely equal to the full thickness cut in regard to fundamental characteristics. It offers an additional advantage that if cut by machine and properly applied it will provide a 100-percent take. A full thickness graft cut by scalpel carries up to a 90 percent loss in take.

Recipient sites for free skin grafts in addition to blood supply also have individual characteristics which influence serviceability of transplant. The stability of architecture influences graft contracture. Thin grafts on nonresilient backgrounds contract little while those on soft mobile structures contract the most. An example of the former would be the forehead of the latter the neck. If a graft contracts further grafting has to be done to release the contracture. This process continues until surface replacement equals surface loss in volume, area, and quality. This is a practical point to be noted in any attempt to overcorrect a region in anticipation of subsequent contraction. Skin grafts will take if fundamental surgical principles are not violated. In definitive repair all fibrosis must be removed, hemostasis must be complete, and the graft immobilized in place for 14 days. Clean wounds when grafted do not usually require a change of dressing before the eighth postoperative day.

To be grafted a granulating region must be relatively free of bacteria. Continuous wet dressings and specific antibiotics

prepare the area. Clinically, when ready for grafting, it will appear bright red in color. It will be nonedematous. There will be no peripheral cellulitis. On such a site a thin skin graft is more apt to take than a thicker one. The first dressing is done on the fourth postoperative day. The process of drainage by continuous wet dressing technique is then continued until healing is adequate.

The homografting procedure combined with the autograft (figs 1 and 2) is another method. In the patient shown, seven donors supplied 14 segments of skin, each measuring about 4 by 8



Figure 1 The area to be skin grafted is shown.



Figure 2 Autografts cover buttocks and thighs.

inches. These pieces were united to form a large blanket. Segments of the patient's own skin were applied to the buttocks and the homograft blanket added to cover the remaining granulating area. The whole procedure of application required less than an hour.

Unusual accidental traumas occur now and then. Those may present problems in surface coverage. Figures 3, 4, and 5 illustrate such a situation. The patient, a motorcycle casualty, sustained the avulsion of the entire leg, the genital organs, and one half of the bony pelvis. As an emergency procedure, the full

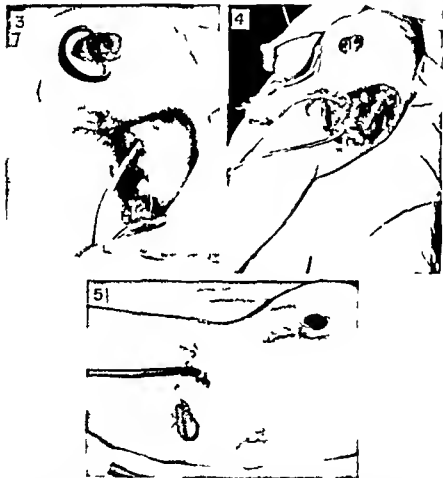


Figure 3 The avulsion of the leg, the genital organs, and one half of the bony pelvis. The trauma patient was taken to the Brooke Army Hospital. Figure 4 Displacement of the avulsed leg. A graft was readjusted for grafting. Figure 5 Appearance after grafting.

thickness skin and subcutaneous tissue was removed from the avulsed extremity and used as an immediate coverage. It is obvious that, without a tube to supply blood, such a graft would die, however, it served as a lifesaving procedure and remained in place until sufficient granulations formed beneath the transplant. Debridement was accomplished in stages. The granulating area with preoperative cleansing then presented a recipient site adequate to receive a free skin graft. The closure resulted in a relatively firm diaphragm. This is in contrast to a recent instance in which a patient with a similar condition was treated at the first stage by a free skin graft. The graft take was successful, but the diaphragm so formed was thin and fluctuant. It is possible that a pedicle flap will have to be substituted to complete the repair.

Figures 6 and 7 show a large open wound with granulating surfaces and the result obtained. The avulsion wound of the



Figure 6. Preoperative traumatic shoulder wound. Figure 7. Final appearance after an intermediate stage of skin grafting.

shoulder was healed by coverage with the free skin graft. Subsequently, this entire segment was excised and the adjacent skin undermined and advanced to produce a single line closure. This early and late treatment is illustrated in figure 8.

An alternative method of coverage is accomplished by excision of all granulations and application of a skin graft to the new bed. The method is applicable for a burn of an extremity. A tourniquet applied above the lesion can make the field almost bloodless. With the use of antibiotics, a three-quarter thickness type of graft will take. Results may then be such that no subsequent definitive skin graft will be necessary. This eliminates much

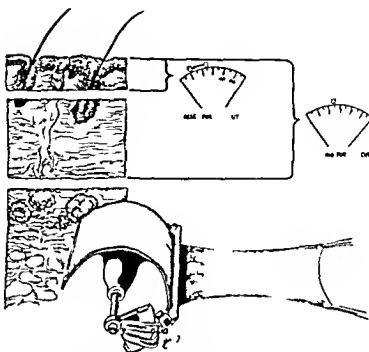


Fig. 11 Diagrammatic representation of plating a leg graft for cr. d. w. f. e. g. w. b. donor mat. sat. limit d. for th. en. ly. te. l. g. ph. e.

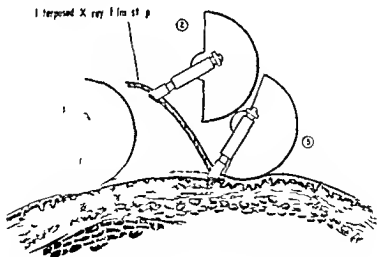


Figure 1 The method of drum position to make the cut. The drum is shown in a cross-section view, with the handle (2) and drum position (3) labeled. The drum is shown in a cross-section view, with the handle (2) and drum position (3) labeled. The drum is shown in a cross-section view, with the handle (2) and drum position (3) labeled.



Figure 13 A double-drum length of skin obtained by repositioning the drum of the dermatome



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Figure 14 Preoperative appearance of old healed burn scar contracture of neck

Figure 15 Repair by excision of 1 inch of contracture and substitution skin graft

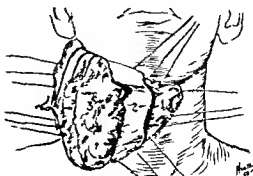


Figure 16. Method of stent application for graft fixation: (1) vaseline gauze placed directly over attached graft, (2) moistened cotton layer cut to shape (3) gauze fluffs firmly approximated to recipient site stent fashion.

In children the institution of free grafts for repairs follows growth curves. Ordinarily it is best to wait as long as possible for complete scar softening before definitive repairs but the surgeon must always act before serious contractures occur.

Figure 17 shows a scar defect involving the elbow and cubital fossa region. The anterior contracture was removed by excising the limiting contracted scar and supplying normal coverage. The free graft was obtained from the abdomen and was fixed on the arm in stent fashion. This eliminated the circular bandage pressure method and its concomitant circulatory hazards.

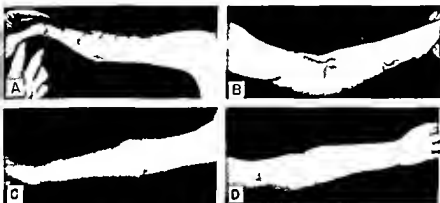


Figure 17 (A) and (B) Removal of the anterior contracture and (C) and (D) Application of the free graft in stent fashion. The graft is fixed in stent fashion to eliminate the circular bandage pressure method and its concomitant circulatory hazards.

In hands free graft coverage is always best. This type of skin graft would not be indicated however when intrinsic repairs are necessary. In this situation a pedicle flap would be required. Figure 18 shows skin graft substitutes for palm losses.

THE TUBE PEDICLE

Skin tube pedicles as separate units have been frequently employed when coverage by open flap could not be conveniently designed. The skin tube offers a clean healed soft tissue transplant having migratory features not otherwise attainable. The construction of an abdominal skin tube and migration by intermediate carrier is shown in figures 19 and 20.

Figure 21 shows the result of this procedure in a patient who had sustained a high voltage current trauma. In 21A there is a loss of skull in the occipital area. The central dural protrusion has been free skin grafted. In 21B a layer of abdominal skin with its subcutaneous tissue has grown into place as coverage. The soft tissue coverage reconstruction is complete. The final stage will

be a bone graft transplant from the ilium to the skull The flap coverage forms an adequate soft tissue bed for this construction The flap of tissue prepared initially before transfer, as shown in the diagrams, must be undermined completely, care being taken not to buttonhole the fascia Complete hemostasis not only in the fascia area but also in the base of the flap, is imperative If hemostasis is neglected or if its absence is masked by procaine hydrochloride and epinephrine anesthesia the results will be disastrous The tissue flap properly prepared has its cut edges united, forming the skin tube Closure of the subjacent denuded

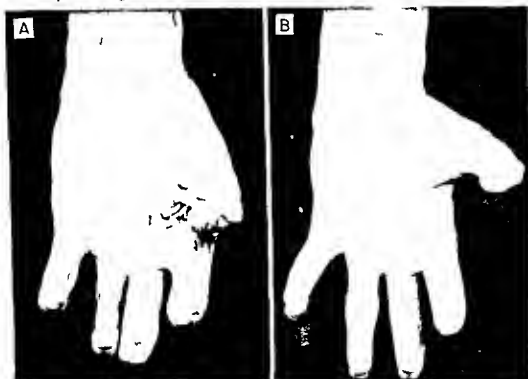


Figure 18 (A) and (B) Almost the entire palm of an adult has been resurfaced

area can be brought about by a variety of methods depending on the location the size of the tube formed and the personal experience and training of the surgeon When tubes are small, adjacent undermining of soft tissue mobilizes it for closure This if done, should always be accomplished without tension If tension is present healing will usually occur with scar formation If the tube is to be as large as that shown here, closure is best by free graft The periphery of the graft is mattress sutured to the skin and subcutaneous tissue of the recipient border The free graft is approximated and fixed by a form fitting stent-type dressing Prior to transfer to the recipient site, large tubes must be tested for adequacy of circulation at the end to be moved by means of rubber band constriction or by delay transfer procedure After a new blood supply to the tube is established from the wrist the structure can be transported

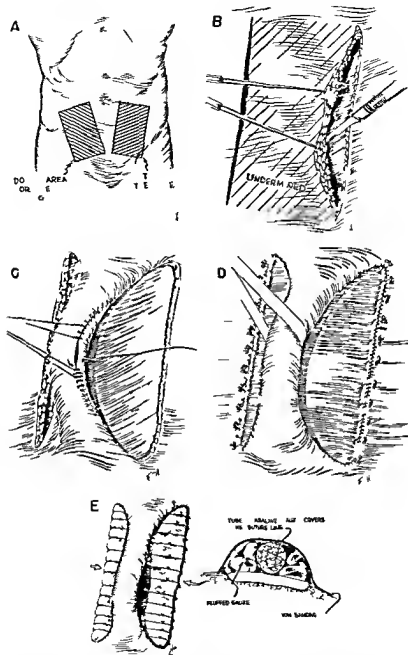


Figure 19 (A) (B) (C) (D) and (E) Abdominal incision for the purpose of the method of incision. A is 4 cm from the posterior side of the abdomen and applied to the abdominal cavity. (C) held place by mattress suture (D) and fastened to the side (E)

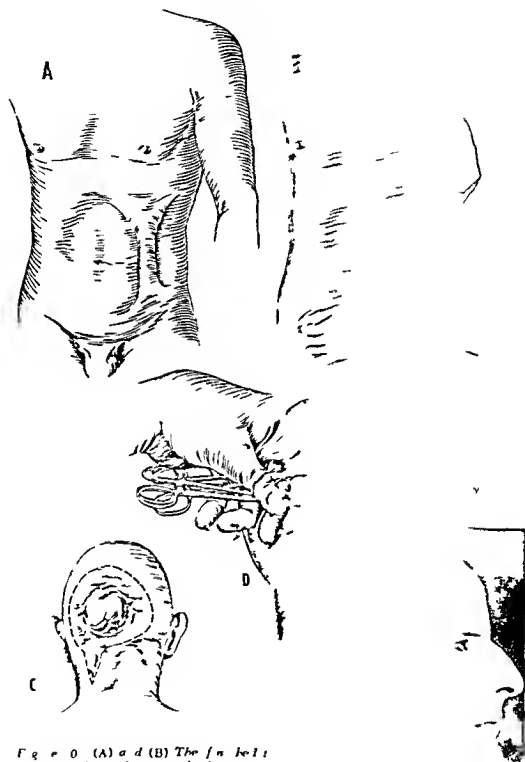


FIGURE 10 (A) and (B) The defect is a broad attachment to the underlying tissue for the flap skin graft and attached to the recipient site.

An arm tube flap is applied as a forehead soft tissue reconstruction (fig 22) In the patient shown in figure 23 a bone graft to complete skull continuity was also needed A prosthetic eye is in place In some situations residual soft tissue is adequate so that only bone is necessary to complete the reconstruction (fig 24) Bone grafts are usually taken from the ilium



Figur 21 (A) Postoperative appearance of healed wound from letrical trauma. The skull bone was intact. The wound was covered primarily by a graft. (B) Appearance after coverage with a nondescript abdominal tissue transfer. See figure 20.

Intermediate carrier such as the forearm for transfer of skin tube or flap grafts occasionally may be needed in jaw reconstruction where massive bone grafts are necessary to rebuild the mandible (fig 25) The abdomen may be the preferable site for obtaining soft tissue substitute because it is the thickest material at hand The soft tissue skin surface of the transplant rarely matches the adjacent facial skin To improve the facial appearance after architectural repair is complete the surface pedicle skin can be excised and the adjacent facial skin mobilized over the summit of the added subcutaneous tissue (figs 26 and 27) This cosmetic procedure is performed after the bone graft take is complete

THE OPEN FLAP SKIN GRAFT

The open flap skin graft differs from the tube in that it remains open in continuity The raw areas both donor and free flap base are free grafted in order to obtain a completely healed lesion postoperatively In cases where all denuded areas are skin



Fig. e 22. Tube formed on arm freed at proximal end after delay procedures is attached as coverage replacement for forehead defect



Figure 23 (A) Preoperative appearance of forehead. There is frontal bone loss replaced by cicatrix and enophthalmos is present. (B) Appearance of a tube flap after bone graft reconstruction and placement of a prosthetic eye.



Fig 24. (A) P p t ppe / / h d d quat ft ts bed
p nt (B) P t per t ppe a / for be d b ne gr ft for k ll
de/ t t k / m th l m

dressed " the pedicle on section can be immediately embedded
The second operation thus completes the procedure

The abdomen is the common site for open flaps. In the wrist defect shown in figure 28 a free skin graft produced early healing eliminating the fibrotic phase. It was necessary to substitute a flap in order to have soft tissue coverage that would ensure an adequate soft tissue bed for intrinsic repair. Figure 29 shows an arm defect requiring bone graft. The soft tissue was



Fig re 25 (A) P per t app ce The l / b k t
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th bd me us m gr t d us g for m nt mediat rrie

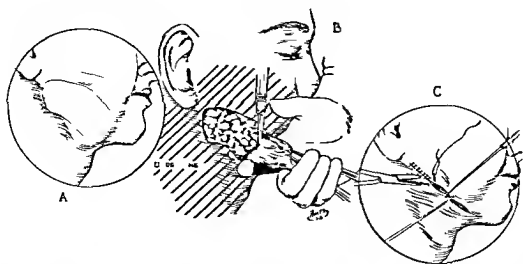


Figure 26 (A) Flap replacement for cheek tissue a poor color match (B) Surface of pedicle skin may be excised leaving transplant subcutaneous tissue in place (C) Adjacent cheek undermined and loosely united over same



Figure 27 (A) Appearance of patient before procedure shown in figure 26. (B) Final appearance

inadequate. A bone graft in this material would likely fail. A wrap around open skin flap was substituted to provide an adequate bone graft bed.

In general, skin flaps are constructed so that they completely cover the defect. They are attached without tension, and in a manner so that the free area of the flap joining the body and completing the vascular continuity does not bend or kink. If this allowance is not observed, nutritional supply is jeopardized. Small sharp bends may, if subjected to subsequent edema, be

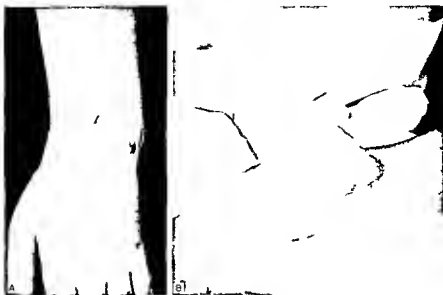


Fig 28. (A) Preoperative photograph of the right lower leg and ankle. (B) Intraoperative photograph showing the placement of a skin flap on the right ankle for treatment.

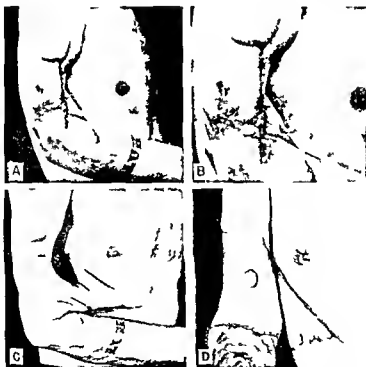


Fig 29. (A) Preoperative photograph of the right arm. (B) Intraoperative photograph of the right arm showing the flap. (C) Postoperative photograph of the right arm. (D) Postoperative photograph of the right arm showing the flap.

converted into pressure kinks which will destroy the vascular supply to the transplant. The periphery of the flap should be carefully approximated to the wound circumference

The anterior surface of the chest offers a flap of thinner character than the abdomen and may be the choice for certain defects of the hand. Complete avulsion of the integument and tendon fascia in many places, involving the index and long fingers of the hand, was treated by immediate insertion of the digits into a skin pocket (fig 30). The definitive procedure consisted of removing enough attached thoracic skin and subcutaneous tissue to completely wrap around the fingers. In this case, three delay procedures were believed necessary before complete detachment. This procedure today is an uncommon one. If skin and subcutaneous tissue is needed, a tube in one as a transplant method would be preferable. Retention of this digit without sensory feeling is debatable.

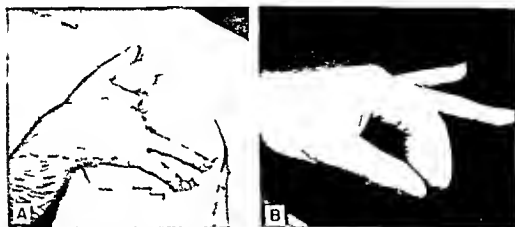


Figure 30 (A) Deep face avul on necrotized flap coverage with the pocket method. It is more difficult to preserve cleanliness. The tube in one method is preferable. (B) Final appearance.

The open jump flap popularized in World War II has been used frequently and seems to be a somewhat faster procedure for the transportation of large tissue masses than in certain combined flap types. This, however, is variable because much depends on the individual operator.

Figure 31 shows the result of a jump flap transfer in repair of a lower abdominal defect. The technique of flap attachment to the intermediate carrier is illustrated in figure 32. The raw surfaces of the flap had been skin dressed. Three delay procedures were used before the transfer to the recipient site. This latter was prepared by removing the cicatrix and skin graft covering the peritonium. This long open flap is a modification of the broader type transfer.



Fig 31 (A) P t i app ce f l ue b d m l d f t Th p
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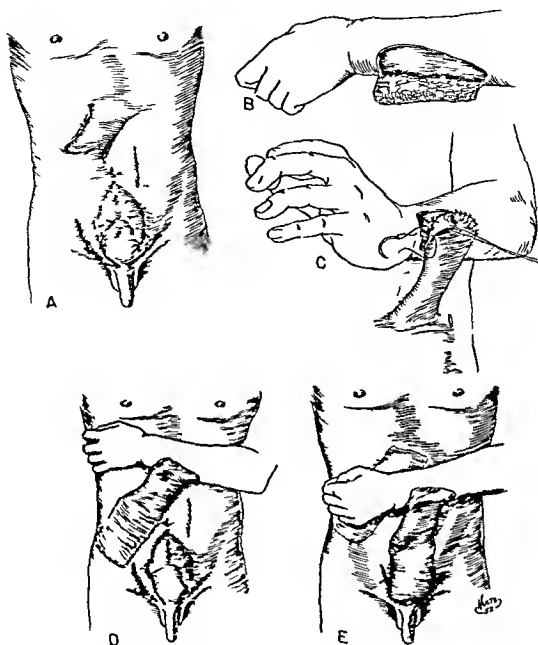


Figure 32 (A) (B) and (C) The first stage of construction of the long flap and its attachment to an intermediate carrier (D) and (E) Method of transfer The dotted lines (F) are the summation of delay procedure incisions

Figure 33 shows the results of resurfacing both legs in preparation for bilateral bone grafts to the tibia. One extremity, having a rather large defect, required a transference of soft tissues that would cover about two thirds of the lower leg. The method is shown in figure 34. The left leg, having a smaller defect but requiring good coverage, was repaired by tube pedicle transplant from the abdomen.

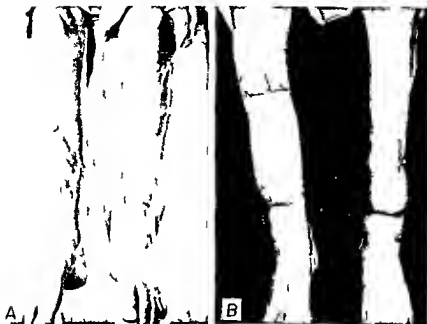


Fig 33 (A) P e p i app B th l g d hau b k
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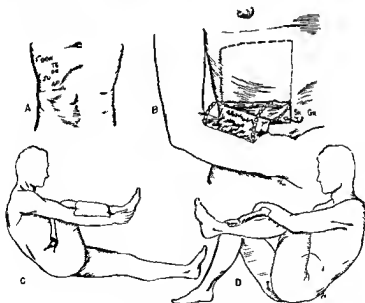


Fig 34 (A) (B) a d (C) P d re d t f ght leg (D) L ft l g
 Sam f g 33

In resurfacing a lower extremity with deep surface defects, several methods have been found satisfactory. The immediately rotated flap has been useful with a skin graft covering the denuded site. This type of tissue transfer properly done carries added circulation to the recipient area. Parallel double pedicle shifts can sometimes be used where lesions are susceptible to these reparative procedures. Rapid repair, shortened convalescence, and facilitated postoperative care are the benefits of both these methods.

The cross leg open skin flap has been used and can be a one stage procedure depending upon its location. In general, for lesions on the lateral leg or foot, cross leg skin pedicles will have to be located in situations where, because of blood supply, a delay procedure is necessary to augment vascularity. Meticulous surgical care is paramount. An improperly or inadequately delayed flap will subsequently show marginal or continuity losses. Flap destructions due to improper design or surgical technique are dreadful things and greatly lengthen hospitalization time.

By and large, lower leg skin flaps are easier and more certain to be successful than thigh transplants. Thigh skin flaps are indicated, however, when a larger amount of subcutaneous tissue is required. They may also be indicated where a cross leg flap has been previously lost, or there are amputation prohibitions. Inner thigh skin tubes and reverse suprapatellar flaps in general are successful.

An ankle defect was repaired by a thigh skin flap (fig. 35). The position of flap attachment is shown in figure 36. A plaster splint immobilized the legs. An avulsion wound of the foot requiring not only intrinsic repair but also adequate surface protection against subsequent trauma is shown in figure 37. The cross leg flap technique is shown in figure 38.

An infrequent use of the open cleft flap is shown in figures 39 and 40. The split distal end allows the transplant to cover a bilateral defect of the ankle. Figures 41 through 43 show a thigh tube pedicle used in the repair of a defect of the heel surface. Figure 44 shows the position of attachment.

Skin tube pedicles used to repair defects of the sole of the foot are infrequent. They are more time consuming in comparison to the open flap cross leg technique. For example, a multiple migration procedure was used to surface the sole of a foot injured by radiation. The procedure was so planned that the thicker skin of the back ultimately came to resurface the sole of the foot. The technique of migration is shown in figures 45 to 48. It is a unique possibility. Figure 48 shows the result of the migration method.



Figure 35 (A) Preoperative lesion (B) Postoperative result

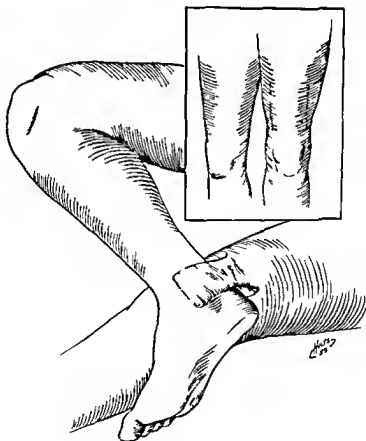


Figure 36. A skin flap elevated and sutured



Figure 37 (A) Preoperative appearance (B) Final result.

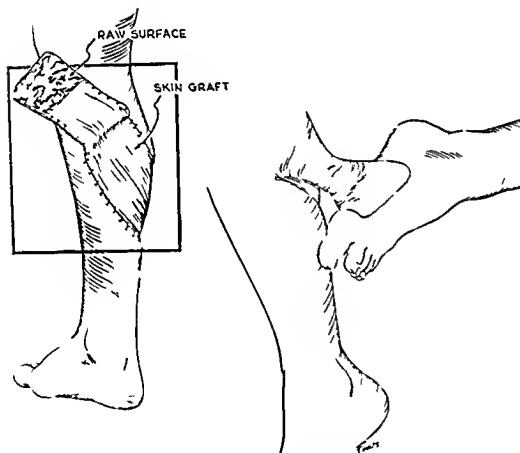


Figure 38. The raw surface of constant calf flap were skin grafted to produce a healed unit. The position of cross-ligament attachment is also shown.

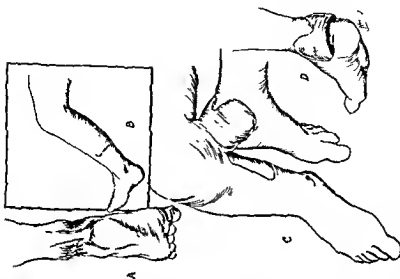


Figure 40 (A) Location of flap (B) Flap (C) Flap attached (D) Spatula used for attachment of flap



Figure 39 (A) Flap (B) Flap attached (C) Flap attached (D) Flap attached

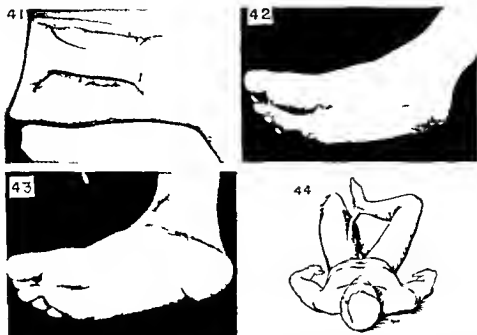


Figure 41 A constructed thigh skin tube with distal delay incision. A skin graft faces the donor site. Figure 42 Preoperative appearance of heel defect. Figure 43 Final appearance of heel. Figure 44 A sketch illustrating the method of fixing a tube transplant to a heel.

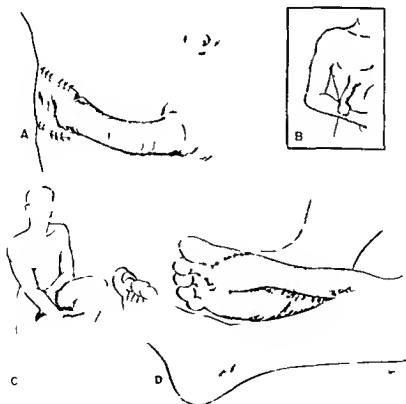


Figure 45 (A) (B) (C) and (D) Toe transposition to sole of foot. This unusual procedure shows the possibilities.

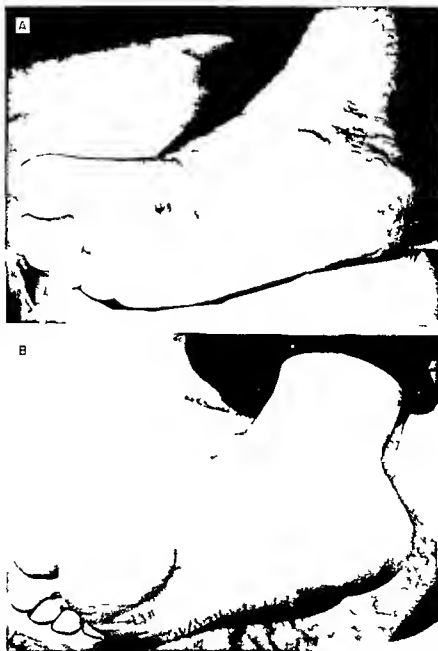


Fig 46. (A) Rad t on cr (B) Co r ppl d / om p d l k f
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Gr duat Sch ol D s f M d cal S ; N tional Resea h C nc l W sh ngto
D C Ma 1952

THE MODERN SURGEON

The self sufficient surgeon is no more. The modern surgeon remains the head of the operating team but his personality and characteristics are quite different from those of his predecessor. He has learned from experience what can be accomplished by concerted effort in the operating theatre by the help of a highly skilled staff of workers and in the world at large by organization. He need not abandon his authority but he must exercise it with wisdom. He must be able at one and the same time to assume full responsibility for the operations he performs and to share the honors of success with his colleagues. He must combine the encyclopedic knowledge required of the modern surgeon with the objectivity of a research scientist; his sense of justice must be unimpeachable and at the same time his attitude must be friendly, outgoing and genial to all with whom he comes into contact. Patience, as always, is of the essence. He cannot always find the helpers he needs; he must work then generously and graciously with those who are available.

—CARLOS GAMA, M.D.

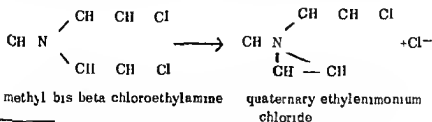
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ACTH AND NITROGEN MUSTARD IN THE TREATMENT OF NEOPLASTIC DISEASE

EMANUEL ROLLINS *C pta (MC) USN*
CHRISTOPHER C SHAW *C pta (MC) USN*

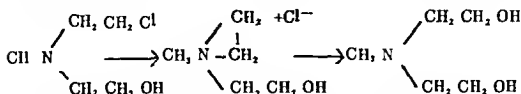
FOR the past several years the role of nitrogen mustard in the therapy of neoplastic disease has undergone extensive investigation. Reports from many sources have established fairly well the status of this chemotherapeutic agent. The adrenocorticotrophic hormone of the pituitary gland (ACTH) has been similarly studied. The present report reviews the results obtained from the combined use of nitrogen mustard and ACTH therapy in a wide range of neoplastic diseases.

The use of nitrogen mustard in the treatment of neoplastic disease came as a sequel to investigations of the biologic actions of mustard gas after World War I and again during World War II. It was observed that mustard gas slowed the rate of cell division, impaired the formation of blood cells in man, and inhibited the formation of tar induced tumors in mice. Experiments with closely related chemical compounds, the nitrogen mustards, exhibited similar biologic action with less toxicity. The most effective of the nitrogen mustards proved to be the preparation used in clinical medicine today, namely methyl bis beta chloroethylamine hydrochloride (HN). This compound is a stable, highly soluble white powder which in aqueous solution rapidly undergoes a chemical reaction known as intramolecular cyclization with the formation of a highly reactive cyclic onium cation, ethyleniminium. It is the latter cation which reacts with the body cells and produces both toxic and therapeutic effects which have been so extensively investigated in the past decade. The reaction of nitrogen mustard with water to produce the reactive ethyleniminium ring is completed in 2 or 3 minutes.



F m th M d I S U S N val H p tal Oskl d, Calif Cap R H w
gn d to U S N val H p tal B m W h

With the completion of the second stage, which is slower, the cytotoxic effect is lost, a mono- and finally a di hydroxy compound then is formed



An appreciation of the above reaction explains the need for the immediate administration of the nitrogen mustard solution.

It is known that the ethyleniminium compound reacts with and alters many functional groups of compounds of biologic importance such as α -amino sulfhydryl, hexose phosphates and many others. The outstanding reaction is that which causes the death of cells. When therapeutic doses of nitrogen mustard are administered cellular susceptibility is related to proliferative activity. Mitotic activity of many types of cells from several species of experimental animals is inhibited by minimally effective doses of nitrogen mustard. Mitotic inhibition is confined to the resting phase of the mitotic cycle. Cells in active mitosis when exposed to nitrogen mustard complete their division. Nitrogen mustard then prevents further mitosis and eventually the inhibited tissue becomes depleted of mitotic figures.¹ Other evidence of direct toxic action on nuclear mechanisms is seen when the tissue is exposed to high doses of the drug. Nuclear fragmentation and abnormal chromatin dispersal are considered as pathologic and incomplete mitosis. No other class of chemical agents has been shown to have such specific action on nuclear activity.

Similar effects can be produced by x ray. Thus, tissue reaction to systemic administration of nitrogen mustard is similar to that produced by total body exposure to x ray. There is a vulnerability of the blood-forming organs and of the intestinal tract. Lymphopenia, granulocytopenia, thrombocytopenia, and moderate anemia occur. The severity of the response depending on the amount of drug administered. Lymphoid tissue throughout the body is uniformly depressed.

It was the above-observed effects which suggested the therapeutic use of nitrogen mustard in the treatment of patients with malignant lymphomas. Gilman and Philips referred to unpublished data originally reported in 1943, by Gilman, Goodman, Philips and Dougherty in a confidential military communication concerning the clinical application of a nitrogen mustard compound in the treatment of neoplastic disease. The use of the drug was started in several clinics at once. With the end of World War II, the agent was distributed widely for clinical evaluation. Since then a great number of excellent reports have appeared.²⁻⁴

ACTH stimulates the cortex of the adrenals to produce a great many different steroid compound. The effects produced on the body are widespread and profound. The physiologic and toxicologic actions of the corticosteroids are induced mainly by the increase in compound F (hydrocortisone) in the circulating blood.

EFFECTS ON HEMATOPOIETIC SYSTEM

Numerous observations have established the marked effects of ACTH on the hematopoietic system. Short periods of administration of ACTH or cortisone produce a transient decrease in circulating lymphocytes. Prolonged treatment with ACTH results in a gradual return to normal lymphocyte level. Eosinophils fall in the peripheral blood but increase in the bone marrow. Reticulocytosis and erythrocytosis occur in those conditions which improve clinically under ACTH or cortisone therapy. In idiopathic thrombocytopenia associated with normal bone marrow, cortisone may cause the number of platelets to return to normal. The thymus, lymph glands, and abnormal cells of lymphosarcoma and chronic lymphatic leukemia are temporarily sensitive to ACTH or cortisone.

Reports to date indicate that cortisone or ACTH can produce transient regression of lymphomatous tumors including Hodgkin's disease, leukemia, lymphosarcoma, and occasionally plasma cell myeloma. Except in isolated cases, the neoplastic disease recurs rapidly when treatment is discontinued. Remission under continued therapy may last for several months. In other neoplastic diseases there is no advantage except for an unpredictable and temporary improvement in the general condition and psyche. Steroid therapy produces such widespread and profound metabolic changes in the entire body that the effect on neoplastic tissue is not considered specific or unidirectional.

MENTAL REACTIONS

ACTH or cortisone can produce a great variety of mental reactions. Some are beneficial and are associated with improvement in the general condition; others may result from the direct euphorogenic action of the adrenocorticosteroids. Mood changes for better or worse are usually dependent on the basic personality of the patient.

METHODS

The very nature of cancer precludes the use and observation of a single therapeutic entity for the purpose of comparison with another single type of treatment; therefore, in the group of patients reported here, management was not confined to the combined ACTH-nitrogen mustard medication but included roentgen therapy, surgical treatment, hormones, and supportive measures when indicated.

Specific medication was administered in the following manner 25 mg of ACTH were added to a liter of 5 percent dextrose in distilled water, and this was administered slowly over an 8 hour period for 6 consecutive days Nitrogen mustard was given on the second through the fifth day, the daily dose was 0.1 mg per kilogram of body weight The nitrogen mustard medication was prepared immediately before administration Ten cubic centimeters of sterile distilled water were added to the 10 mg ampule of nitrogen mustard The previously calculated dose was withdrawn into a syringe and injected into the rubber tubing of the freely flowing intravenous ACTH infusion Five minutes after the injection, the rate of flow of the ACTH infusion was reduced It was found that nausea and vomiting could usually be avoided by thoroughly sedating the patient in the early evening and giving the nitrogen mustard shortly before bedtime A few patients received the ACTH intramuscularly 25 mg every 6 hours for 6 days In such cases the nitrogen mustard was injected into the tubing of a freely flowing intravenous infusion of 5 percent dextrose in distilled water in order to prevent venous thrombosis or phlebitis The glucose solution was discontinued in most cases shortly after the medication was administered

RESULTS

Table 1 lists all of the cases of neoplastic disease in 46 patients treated with combined ACTH and nitrogen mustard* during 1952 and 1953 at this hospital One third of the patients had been followed during the preceding several years the remainder were seen for the first time during the course of the 2 year period, 1952-1953 The diagnosis of every case listed was confirmed by microscopic tissue study, and was further confirmed by the Armed Forces Institute of Pathology Autopsy study was accomplished in 28 of the 37 patients who died while undergoing study and treatment

Our patients received from one to eight courses of combined ACTH nitrogen mustard medication Responses to therapy were classed as good, slight, or none Results listed as good comprised the patients who obtained relief of pain for more than 2 weeks These patients were able to return to work or were able to engage in greatly increased physical activity for a short period Patients who derived slight benefit from therapy consisted of those who noted any improvement whatsoever but less than 2 weeks in duration The physical activity of these patients was not improved The results listed as none consisted of the patients in whom no subjective or objective improvement was observed

* Combined therapy given by O. W. D. McCarthy, Clinical Consultant, Oncology
U. S. N. H. Hospital of California

TABLE I Results of 46 patients with pleural effusion treated with ACTH nitrogen mustard

Disease	Number	Therapeutic response			Survival months (months)	Living June 1955 Number
		Good	Slight	None		
Hodgkin's disease	10	9		1	6 32 52	7
Relapsed lymphoma	1			1	0	0
Lymphoma lymphocytic	1	1			12	0
Giant cell lymphoma	1	1			3	0
Osteogenic sarcoma	1	1			2	0
Carcinoma of larynx	2	1		1	0 8	0
Breast carcinoma	7	3	1	3	1 2 4 5 7 11 67	0
Adenocarcinoma of breast	2	1		1	1	1
Lung carcinoma	2			2	0 4	0
Carcinoma of pancreas	2			2	1 12	0
Hemangioma of bone	1		1		2	0
Carcinoma of bladder	3			3	4 2 3	0
Malignant melanoma	1		1		2	0
Carcinoma of rectum	2			2	3	0
Embryonal carcinoma	1			1	3	0
Sarcoma of soft tissue	1			1	2	0
Adenocarcinoma of prostate	1			1	2	0
Adenocarcinoma of bone	2			2	6	1
Malignant mesothelioma	1			1	1	0
Adenocarcinoma of liver	5		1	4	1 5 7 18 26	0
Total	46	17	4	25		9

DISCUSSION

Hodgkin's Disease

In the 10 cases of Hodgkin's disease a critical evaluation of the effects of ACTH nitrogen mustard therapy is not possible. The

number of cases is too few, and combination or interim x ray radiation was used one or more times in 8 of the 10 patients with this disease. The end of remission is defined as recurrence of fever or enlargement of lymph nodes, spleen, or liver. In this group of patients with Hodgkin's disease, with duration of life from onset of disease varying from 16 to 53 months, the average remission after ACTH nitrogen mustard therapy was a little over 7 months (ranging from 2 to 25 months). In the three patients who died under our care (6, 32, and 52 months after the first course of ACTH nitrogen mustard therapy), the length of remission diminished as the disease progressed until a state of resistance developed. We were impressed with the recognized fact that each case of Hodgkin's disease seemed to progress according to a predetermined course determined by the nature of the disease in the particular individual, and that combined ACTH nitrogen mustard therapy, like x ray radiation or nitrogen mustard alone, produced remissions for a limited time. Survival to date in the seven remaining cases (24 to 42 months since the onset of disease) may or may not be attributed to combined ACTH nitrogen mustard therapy.

Other Tumors

A single instance of reticulum cell sarcoma with involvement of the stomach was seen. The course was characteristically rapid. Treatment with x ray 2 months after onset of symptoms resulted in a remission of symptoms for 4 weeks. Thereafter a course of ACTH nitrogen mustard therapy was completely ineffectual, the patient died at the conclusion of the treatment.

A 34 year old patient with lymphosarcoma appeared at the hospital one month after the onset of superior vena cava obstruction. The chest roentgenogram revealed mediastinal involvement. Relief of signs and symptoms following x ray radiation and ACTH nitrogen mustard therapy was remarkable, and lasted 5 months. A second course of x ray radiation produced a short remission, and a second course of ACTH nitrogen mustard thereafter produced a 2 month remission. Further treatment with ACTH and nitrogen mustard did not impede the growth of neoplastic tissue. The patient died 13 months after the first symptoms attributable to his disease.

Although giant follicular lymphoma is recognized as the least aggressive form of the lymphomata, the course of this disease as observed in the single case listed in table 1 illustrates the known fact that it can never be safely regarded as benign. Jackson and Parker¹² considered the condition potentially malignant; it is very often the prelude to some fatal form of lymphoma. Although lymph nodes and the spleen are primarily involved in the pure form of the disease, other internal organs may be implicated. Russell¹³ recently described a case of giant follicular lymphoma with involvement of the stomach, cecum, and sigmoid colon in which there was

perhaps better deserve the term psychotherapy rather than chemotherapy.

A recently published report of palliation and remission of cancer with combined corticosteroid and nitrogen mustard therapy referred to comparable results at this hospital. It is with regret that we are unable to confirm that encouraging report.

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That eminent American philosopher Will Rogers lost no earlier flood of commission reports, one would mark. Collecting statistics like collecting garbage, if we have it, we have to do something with it!

—EDITORIAL

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 4th Vol. on H. Lib. p. 928, July 1955

THE CURRENT STATUS OF VECTORCARDIOGRAPHY

J A ABILDSKOV *Captain, MC, USAR*

THE IMPORTANCE of the electrocardiogram in clinical medicine is securely established. Extensive experimental and clinical experience has defined both the areas of usefulness and the limitations of these records in the identification of cardiac lesions. It now appears that further progress in the recognition of such lesions necessitates either more knowledge of the basic processes giving rise to bioelectric phenomena, or technical improvements in the registration of these phenomena. The vectorcardiogram (VCG) represents one attempt to improve the registration of electrical events associated with the heart beat.

At this time vectorcardiography is in an experimental stage; however, there is a sound theoretical basis for the expectation that these records may both simplify and improve recognition of cardiac lesions, and an increasing amount of actual clinical observation supports this expectation. In view of the potential importance of these records to cardiac diagnosis, research programs designed to evaluate and improve the records are proceeding in both civilian and military institutions, and it seems desirable that physicians concerned with the diagnosis of heart disease have at least a general knowledge of these studies and their progress. This presentation does not represent a complete review of the already extensive literature on vectorcardiography, but is intended to present briefly and simply some of the fundamental concepts which form the basis of vectorcardiography, and to review the results of certain clinical studies which illustrate the potential usefulness of the VCG.

THEORETICAL CONSIDERATIONS

Relation of the ECG and VCG To a limited extent the methods of vector analysis have been applied in the interpretation of electrocardiograms for many years. The routine estimation of the mean electrical axis of the QRS complex, which is a measurement having important clinical connotations, and the concept of the ventricular gradient, which represents an important part of modern electrocardiographic theory, are examples of vector analysis.

information presented by these quantities may be incorporated in a single vector quantity which has the property of specific direction in addition to those of sign and magnitude. Such a quantity is shown in figure 1B. The triaxial reference system shown represents the lead axes of the standard electrocardiographic leads and have been divided into arbitrary units of magnitude. Perpendiculars from the magnitude division representing three positive units on the lead I and III axes have been drawn and their intersection defines the terminus of a vector whose origin is at the zero point of the triaxial reference system. This vector is an instantaneous electrical axis and presents the same information as did the two scalar quantities from which it was derived. If several instantaneous electrical axes are derived from pairs of simultaneous points, the termini of these vectors may be joined in order by a continuous line as shown in figure 1C. The resulting tracing presents the same information as did the original quantities from which it was derived, and if one began with this tracing alone the standard and unipolar limb leads of the ECG could be derived. With modern cathode ray oscilloscopes and electronic amplifiers such vectorcardiographic tracings may be recorded directly. Unlike the galvanometers employed to record ECGs, the beam of a cathode ray tube can be deflected both horizontally and vertically so that vector quantities representing the resultant of two scalars may be registered directly. The frontal plane projection of a VCG recorded from a cathode ray oscilloscope is shown in figure 1D.

Because one record can be manually derived from the other it is appropriate to ask why more information is expected from the VCG than can be obtained from the ECG. There are at least three reasons this expectation is valid. (1) In the vectorcardiogram recorded with the cathode ray oscilloscope the potential differences giving rise to horizontal and vertical deflections are combined in perfect time phase. Even though the general form of the VCG can be derived from simultaneously recorded ECG leads, the detailed configuration of the VCG depends on the points from which the vectors are plotted occurring within a few milliseconds of each other.¹ Because time intervals in that range cannot be recognized in the conventional ECG, the VCG is presenting information which cannot be extracted from the ECG. (2) Another reason the VCG may provide information in excess of that given by the ECG is the different form in which the same data is presented. This may possibly serve the purpose of making certain aspects of the data more easily apparent. (3) Still another reason for the expectation that VCGs may be more useful than ECGs, concerns the three dimensional nature of electrical processes in the heart. Conventional electrocardiography has been limited to the frontal plane of the body as re-

flected in the standard and unipolar limb leads and to sampling specific areas of myocardium with the precordial leads but has not attempted to view the electrical processes in the heart as a single spatial event. Although there is no reason why studies of spatial electrocardiography should not be done and would not provide useful information the VCG by combining the information from several scalar ECG leads represents a simpler approach to such a study.

Methods of electrode placement To study the electrical phenomena arising in the heart in three dimensions it is necessary to place electrodes on the body in such a way as to define a spatial reference frame. A considerable amount of the research relative to the vectorcardiogram that has been done to date has concerned the advantages and disadvantages of a variety of methods of electrode placement. The reference systems which have been most widely employed are simple geometric figures such as the tetrahedron, cube, and parallelepiped. The use of any of these electrode arrangements necessitates several assumptions which are known to be in error. A comparative study of the reference frames named has shown that the equilateral tetrahedron produces a significantly less distorted indication of the electrical field of the heart than the other simple geometric reference systems. Another approach to the problem of electrode placement is represented by the work of McFee and Johnson. These workers have obtained the pattern of various lead fields using fluid mappers as hydraulic analogues of the body. With this information it is possible to select combinations of leads with fields in which undesirable features tend to cancel each other. This appears to be a potentially important concept to electrocardiography and vectorcardiography and it may form the basis of the system of electrode placement which will be eventually adopted for future studies.

CLINICAL STUDIES

The variety of methods of electrode placement in use makes it difficult to assess overall progress in the clinical study of the VCG. There are no areas in which the VCG has been unequivocally shown to provide clinically useful information in addition to that furnished by the ECG. There are, however, several studies which suggest that the VCG may eventually provide such information.

The normal VCG Study of the VCGs of normal subjects has furnished an example of the manner in which these records may make certain data more accessible than it is in the conventional ECG. As is well known, the range of variation of normal ECGs is wide. Vectorcardiographic studies have shown that this variation is mainly the result of variation in spatial orientation of electric

forces from the heart and that much less variation in the contour of the VCGs themselves exists.⁴⁻⁶ This finding not only simplifies the recognition of normal records but provides a basis for the study of abnormalities.

The VCG in intraventricular conduction defects One of the areas in which the ECG gives less than the desired amount of information is in the precise identification of specific cardiac lesions occurring in association with disturbances of intraventricular conduction. The difficulty of recognizing myocardial infarction in the presence of left bundle branch block and the precise identification of right or left ventricular enlargement in the presence of bundle branch block are well known. It is also difficult to differentiate certain conduction disturbances of the right bundle from right ventricular enlargement. Although it can not yet be considered established, there is suggestive evidence that the VCG may provide more precise data than the ECG regarding these difficult diagnoses. A different VCG pattern has been reported in patients in whom other studies established the presence of right ventricular enlargement, than that found in patients with ECG evidence of right bundle branch conduction disturbances without other evidence of right ventricular enlargement.⁷ Left ventricular enlargement in the presence of right bundle branch block has been reported to be associated with VCGs whose initial portions are similar to those found in patients with left ventricular enlargement without conduction disturbances while right ventricular enlargement in association with right bundle branch block has been found to yield VCGs where the major area enclosed by the QRS loop is located to the right of the isoelectric point.¹⁰

Subjects with left bundle branch block in whom clinical and laboratory data make the diagnosis of myocardial infarction highly likely have been found to have VCGs whose orientation and contour differ from those of other patients with this conduction disturbance and which are most easily explicable by postulating localized myocardial lesions.¹¹ In all of these studies adequate confirmation of the presence of specific pathologic lesions is still lacking, nevertheless the evidence that the VCG may find clinical applications in these areas is very suggestive.

The VCG in ventricular enlargement One of the most characteristic VCG patterns yet described is that associated with left ventricular enlargement. It is well known that such enlargement may exist in the presence of a normal ECG and it is possible that in at least some instances, the VCG may suggest its presence when the ECG fails to do so. The possibilities that the VCG may assist in the differentiation of right ventricular enlargement and conduction disturbances of the right bundle branch

and in the recognition of right and left ventricular enlargement in the presence of bundle branch block have already been mentioned

The VCG in myocardial infarction As has been mentioned there is suggestive evidence that the VCG may assist in the recognition of infarction in the presence of left bundle branch block. There is also reason to believe that infarcts so located that only terminal portions of the ventricular depolarization process are altered may be recognized by the VCG. In the case of the ECG the marked variability of all but the initial portions of the normal QRS complex makes it impossible to recognize definitely those lesions so located that only the terminal QRS is affected. The similarity in contour of VCGs from normal subjects suggests that variation in the contour of portions in the VCG other than the initial one may be recognized in these records more easily than in ECGs.

SUMMARY

There is a sound theoretical basis for the expectation that the vectorcardiogram (VCG) may provide clinically useful information in addition to that furnished by the electrocardiogram. Clinical studies to date support this expectation and there is suggestive evidence that the VCG may be useful in the recognition of ventricular enlargement and infarction in certain instances in which the ECG does not reveal these lesions. There is also evidence that the VCGs of normal subjects are less variable than are normal ECGs and this may serve to both simplify and improve the recognition of normal electrical processes in the heart.

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CHRONIC DYSENTERY DUE TO MIXED PARASITIC INFESTATION IN CHILDREN

Proctoscopic Findings

ROBERT O. SEASOHN, Captain MC AUS

BERNARD T. GARFINKEL, M.D.

TERVINA FIGUEROA, M.D.

DIRECT visualization by means of the rectosigmoidoscope is an established aid in the recognition of parasitic infections of the colon. The appearance of the mucosa in specific dysenteries such as amebic and bacillary, is well known.¹ However, no controlled observations of findings in mixed parasitic infestation in children are available. The purpose of this report is to call attention to the lack of specificity of mucosal findings in mixed infestation.

METHODS AND MATERIALS

This study comprises an analysis of 206 children consecutively admitted to the clinic of the San Juan City Hospital because of chronic bloody diarrhea. The group consisted of 129 boys and 77 girls with a mean age of 3.5 years, almost half of these children having had symptoms for nearly a year.

After careful history taking and physical examination, proctoscopic examination was done without prior preparation of the patient. The aspirated fecal material or exudate was immediately examined microscopically and also was sent to this laboratory for isolation of shigella or salmonella bacteria or *Endamoeba histolytica*.

RESULTS

Despite lack of prior preparation, adequate visualization of the mucosa of the rectosigmoid was possible in 137 (77 percent) children. Parasitologic study of fecal material from the remaining 49 (23 percent) children, however, gave almost identical percentage results (table 1). No pathogens of the enteric group were isolated.

The boys were infected with more species than the girls: 1.17 protozoa and 1.04 helminths per boy and 0.90 protozoa and 0.80 helminth species per girl.

From the Pediatric Research Laboratory, U.S. Army San Juan City Hospital, 22 Woodland Rd., Ashland, Mass. Dr. Garfinkel is a Visiting Fellow at the Harvard Medical School, Boston, Mass.

TABLE 1 *P* *t l g / d g* 206 *b l d* *m d p t*
p lly u th t p p p t

P r a f d	T m l d			
	Adeq t ly (157 pa)		In d q a ly (49 pat)	
	N ml	P t	N ml	P
P toz				
E d moeba h lyt	39	24	13	26
E d moeba l	52	33	17	34
Iod m ba b ts hl	5	3	0	
E d l ma	12	8	6	12
Ch l ma m l	19	14	14	28
T ypa m h m	44	28	17	38
E t m na h m	9	6	1	6
B la dum l	6	3	1	2
G d l mbl	32	20		
H lm th				
T r hur h	126	80	39	78
A l mb d	57	36	21	42
S h t ma ma	1		0	
H kw m	14	9	3	6

The proctoscopic findings in children in whom visualization was adequate (table 2) failed to disclose any difference which could be attributed to *E histolytica*. An equivalent number of patients with ulceration were found in all groups

TABLE 2 *F nd g* 157 *b l d en w b bro d rbt wbm*
p p as l x l wa d q

F nding	T me b sv d (to 157 p)		E hr lye				P h E h lye nd T tr h ura b ur (on 18 pa nt)	
	P		P (39 p)		Ab (118 pa nt)			
	Numb	P	Numb	P	Numb	P	Numb	P
H rth g	75	48	20	51	55	46	3	16
Mucus	28	18	6	15	22	18	3	16
Ul er	8	3	3	8	5	4	1	5
F abl uc	15	35	11	29	44	37	9	50
Adul T h ura	85	54	28	71	57	48		
All bur p nt had T h ur								
One p nd ex d h B l								

Table 3 presents stool findings which are often regarded as suggestive of the presence of *E histolytica*. While there is a strong suggestion that white blood cells are less frequently seen and Charcot Leyden crystals more frequently seen in stools of

those with *E. histolytica* infection, the differences are not statistically significant. The material obtained through the proctoscope was cultured on Nelson's medium and on the egg slant medium. *E. histolytica* was thus isolated in 31 of the 52 children with amebic dysentery. In addition, stool cultures on artificial media disclosed seven cases not recognized by means of routine examination.

TABLE 3 Findings in stools of 208 children with chronic diarrhea and amebiasis

Findings in stools	Times observed in children with chronic diarrhea			
	In 206 patients		In 52 patients with <i>E. histolytica</i>	
	Number	Percent	Number	Percent
Red blood cells	116	56.3	30	57.7
White blood cells	30	14.6	4	7.7
Charcot-Leyden crystals	59	28.7	20	38.4

CONCLUSION

From an analysis of proctoscopic findings in a group of 206 children with chronic bloody diarrhea due to mixed parasitic infection, it would appear that there is no distinguishing morphologic feature which can be correlated with a specific infectious agent. Ulceration of the colon was not confined to children infected with *E. histolytica*.

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neurotics build castles in the air
psychotics live in them and psychiatrists charge them both rent

—R. V. GIRARD, M.D.
in *American Journal of Psychiatry*
p. 81 Aug. 1955

OSTEORADIONECCROSIS AND THE DENTIST

HERMAN KAPLAN L. D. and J. Org. d. (DC) USNR

THE DENTAL profession has been fully informed about its responsibilities in the detection of oral cancer. Information about the problem has been widely disseminated so that today the dentist and the dental student are well aware of the incidence of the disease and what they can do to help combat it. It is generally being recognized that the co operation of different specialties of medicine preferably as a group or board sitting down together and deciding on the problem at hand and its eventual treatment will remove the responsibility from one individual whose knowledge and experience are necessarily limited. Today the two definitive methods for treating cancer are radiation and surgery. Great strides in radiation therapy have been made in the field of cancer of the oral cavity. Watson and Scarborough said, in 1938 "Neoplasms having their origin in the tissues about the head and neck are particularly well suited to irradiation measures." This statement should be modified somewhat because today surgery has stepped in to handle many cases which would not be cured by radiation therapy.

With the advent of extensive radiation procedures about the head and neck there has been a concomitant increase in cases of osteoradionecrosis as a complication. In a review of 1819 cases treated by the Head and Neck Service of Memorial Hospital New York N. Y. it was found that 235 patients (13 percent) developed osteoradionecrosis.

The effect of radiation on bone development has been known for some time. In 1905 Tribondeau and Recamier were able to show that radiation to the skull of a newborn cat inhibited the growth of bone in that area. Cluzet in 1909 irradiated fracture sites both before and after fracture was induced. Macroscopic and microscopic analyses showed slowing down and in some instances complete absence of callus formation. This indicated that something had occurred to inhibit the repair mechanism essentially as related to the periosteum. Wilkins and Reagon demonstrated that irradiation caused a drop in phosphatase activity after fracture as well as in growing dog bone. In 1920

F m U S N I H p o t l S Albans N Y L Kapla is w boad he U S S R and lph.

Regaud⁵ of the Curie Institute showed that the maxillary bones were susceptible to necrosis and infection during treatment of intraoral cancer with radiation. Bone, he thought, was more vulnerable to radiation than skin. He believed that the calcium and phosphorus in bone set up secondary radiations of a more caustic nature causing damage to the vital parts of the osseous tissue. Regaud, it seems, was very close to the truth.

In 1924 Blum⁶ reported a case of osteomyelitis of the maxilla and mandible which was caused by some radioactive substance used in the manufacture of luminous dials for watches. This was part of the now famous incident of radionecrosis developing in people who worked for a luminous dial watch company. The workers painted a preparation of 2.5 mg of radium bromide per 100 ml of solvent on watch dials and hands. The brushes were compressed between the lips and buccal mucosa so as to obtain a fine point. Thus these people were exposed to a considerable amount of radiation. However the cases reviewed also showed such predisposing factors of pyorrhea, mouth infection, and dental caries.⁷ Dalby and associates,⁸ Strauss and McGoldrick,⁹ and Baker¹ recorded cases of fracture of the femoral neck following irradiation for pelvic and gynecologic cancer. They strongly suspected that these fractures were due to diminution of vitality of the femur due to irradiation. It should be stated, however, that not all investigators agree that bone is so susceptible to radiation. Flakamp,¹ in 1930, said "The healthy bone of the adult appears to be very radio-resistant. He was backed up by Colwell and Russ. "Adult bone is relatively resistant to x ray and injuries from this cause are rare." These opinions were in the minority, however, and a preponderance of evidence soon began to mount, indicating that a tumor dose of radiation, 2 e enough roentgens to kill a tumor, also affected bone of that area in a very deleterious manner.

In 1939, del Regato¹¹ dealt with the dental lesions complicating radiation therapy. He indicated that healthy teeth in an area of radiation easily become hypersensitive, abraded, carious, and sometimes completely crumbled. The mechanism has been obscure, although theories of destruction of the odontoblasts of dentine, atrophy of salivary glands, lowering of the pH of saliva, and extensive use of fruit candies to compensate for diminution of saliva have been advanced. The importance of this observation is the indication that infection is an added danger to a mandible or maxilla which has been irradiated and devitalized.

The exact mechanism of osteoradionecrosis is not known. Why some people are apparently more radiosensitive than others is also not known. However the physiology of the mechanism seems to indicate that it is a vascular phenomenon. That bone does lose its vitality is indicated by a diminution in calcium and

phosphorus exchange Commander H C Dudley (MSC) USN working with radioactive phosphorus indicated that bone which has received a tumor dose (usually from 3 000 to 4 000 r) will not pick up any radioactive phosphorus When a scintillometer was used over areas of irradiated bone the count was very low as compared with normal bone indicating that bone metabolism was abnormally poor Normal bone however picked up a good deal of the tagged element The physiology and microscopic anatomy of irradiated bone were well discussed and evaluated in an article by Ewing

In order to understand bony changes due to irradiation it would be best to review superficially the structure of bone Bone cells are derived from mesenchymal embryonal cells which form osteoblasts and subsequently become enclosed in a space or lacuna that they have a part in forming by the deposition of bone These cells are connected with one another vertically and horizontally by small canaliculi Enclosed in peripheral bone are haversian systems which contain blood and lymph vessels In the interior of the bony system are the highly vascular marrow spaces On the outside of a bone is a sheet of osteoblastic and fibrous tissue called the periosteum which is also highly vascular We see that bone is essentially "a rich vascular network enclosed in a rigid framework of bone tissue the structure of which makes it highly vulnerable to the effect of irradiation

After irradiation there is an initial hyperemia of blood vessels followed by induration and relative anemia There occur subsequently a swelling and mucinous degeneration of collagen fibrils which are an integral part of the walls of blood vessels There is an occlusion and rupture of capillaries in the area These phenomena led Ewing¹ to proclaim "I have become convinced that irradiation acts very largely through vascular disturbance

The periosteum becomes thickened and hyaline The layer of osteoblasts on the inner surface usually is found to be absent The bone marrow is deprived of cells and undergoes fatty degeneration The marrow space is increased and no new bone appears The bone itself shows marrow and irregular trabeculae with obliterated sclerosis of the nutrient vessels The bone cells show degeneration and stain poorly with hematoxylin and eosin The lamellar bone appears hyaline and very brittle and canaliculi are closed

The entire picture ties in well with the phases of osteoradionecrosis With the blood supply occluded factors that play a role in radioresistance are lost The osteoblasts no longer function and no new bone forms The bone becomes devitalized and may remain quiescent for years until trauma or infection is superimposed and then the bone sequesters quickly

The question of osteoradionecrosis, then, is resolved down to devitalized bone caused by radiation which is then aggravated by a superimposition of infection or trauma. The development may be rapid or, as previously stated, the condition may be dormant for years and then spontaneously occur. Cases have been known to be dormant for 6 to 10 years before osteoradionecrosis develops. The long delay in sequestration and solution of devitalized bone can probably be explained on the basis of injury and sclerosis of blood and lymph vessels in the haversian systems, periosteum, and surrounding tissues. It seems evident that because calcium makes up 85 percent of bone, when bone is irradiated the calcium transforms the hard, penetrating, primary radiation to a more caustic and selective type of secondary radiation. The periosteum, therefore, and the inner layer of cells receive the primary radiation and the maximum effect of the caustic secondary rays. As Regaud¹⁴ said "The irradiated bone burns and burns the periosteum and mucosa enveloping it."

It should be noted that of all the bones of the body, none, except perhaps the neck of the femur, is as dense as the mandible. Therefore, the bones of the head most frequently altered by radiation are those of (1) the mandible (2) the maxilla and (3) the calvaria. The mandible because of its shape, compact composition, and presence of one nutrient artery, is more susceptible than any other bone of the head.

Clinically osteoradionecrosis may range in severity from a small sequestrum, which will exfoliate, to an ulceration of soft tissues and exposure of bone associated with a continuous, dull unrelieved pain. Trismus, swelling, draining sinuses, and later pathologic fracture then death may occur. The bone infection may last as long as 8 years with drainage, yet recovery may occur. In the series of 125 deaths at Memorial Hospital, bone complications were a factor in the cause of death in 106 patients (85 percent), and 12 patients (9.6 percent) died as a direct result of osteoradionecrosis and free of cancer.¹

What then shall be the course of action from a dental view point in patients to be irradiated and patients who already have been irradiated? Shall we extract teeth before irradiation procedures or try to save them? Shall we extract teeth in people who have been irradiated and if so what will be the outcome?

There seems to be unanimous agreement that all infected carious and questionable teeth be extracted in the area to be irradiated. This statement can be found in articles by Stewart¹ and others.

Many authors believe that the ideal procedure is to render the mouth edentulous with the exception of limited lesions which

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PEPTIC ULCER IN MILITARY PERSONNEL

Incidence and Management

BENJAMIN H. SULLIVAN Jr. *Colonel MC USA*

EUGENE L. HAMILTON *Lieutenant Colonel MSC USAR*

SINCE the passage of the original Selective Service Act on 16 September 1940, the probability of military service has become a factor in the life of every American man. The diseases which affect an individual's eligibility for service or efficiency in service are a proper concern of military and civilian physicians alike. In recent years there has been a significant increase in noneffectiveness in Army personnel due to peptic ulcer. The average daily noneffectiveness per 1,000 average strength was 0.44 for the period from 1942 to 1945 and rose to 0.51 for the period from 1950 to 1953. Days lost per admission were 59 and 64 respectively. Peptic ulcer was the cause of 1 percent of the total noneffectiveness from disease from 1942 to 1945 and of 3 percent from 1950 to 1953. It would seem proper to examine data bearing on the occurrence of peptic ulcer in various military settings, to seek an interpretation of such variations as may be noted, and to consider measures for countering the loss of effectiveness due to this illness.

INCIDENCE

The number of new cases of peptic ulcer in the U. S. Army has varied with the type of military activity. The admission rate is low in peacetime, high in periods of intensive training and in wartime. Admissions of Army personnel to hospital or quarters status for peptic ulcer during the years 1937 to 1953 are given in table 1. The data were obtained by tabulation of individual medical records submitted at the time the patient was discharged from the hospital. An effort was made to recognize "new cases," and readmissions are not shown. The number of admissions per thousand mean strength per year vary from 1.50 in 1940 to 3.36 in 1943, then fall to 1.54 in 1946 and rise again to 3.07 in 1953. Grouping the data as in table 2 serves to emphasize the increase in the rate of admissions for peptic ulcer during periods of threatened or actual fighting.

Admission rates for the different theaters or areas are given in table 3. The rates for troops in the United States are higher

F m L man Army H pital Sa F Cal f d Off c f Th Surg on
G et l D par me f h Army W h gton O C

DISCUSSION

From the data available it seems that the incidence of peptic ulcer in the U S Army does not exceed that in the civilian population. There is an increased incidence in both groups during periods of threatened or actual warfare, followed by lower rates when this activity is terminated. The social pressures which tend to disrupt satisfactory adjustment in the wartime civilian community are familiar to all. The military training camp presents certain additional stresses: disruption of family life, pursuit of unfamiliar military activities under new and frequently changing supervisors, and often the lack of a clear and cogent personal conviction of the necessity for these activities. Instability of assignment, associates, and environment, and the uncertainty of the future are important aspects. Many of these features are present in overseas theaters, but when the theater becomes active the soldier's presence and activity have an obvious purpose, the social ties with his comrades become very strong, and he identifies closely with his unit. The admission rate for ulcer falls. If only combat troops were involved in the rate reduction, one might be tempted to explain it by assuming that many soldiers would ignore their symptoms, and many medical officers would be unwilling to excuse men from front-line duty except in extreme circumstances. These factors are probably important, but it must be remembered that the reduction in rate applies to service as well as to combat troops, and that the former greatly outnumber the latter.

It is generally accepted that emotional factors are related to ulcer genesis and recurrence. Certain factors in personality as well as certain environmental situations seem to precipitate ulcer recurrence in susceptible persons. No true "ulcer type" of personality has been recognized because ulcer occurs in the presence of many different personality patterns. Physicians reporting experiences with World War II soldiers with ulcer distinguished two groups of patients: (a) The regular Army volunteer soldier with considerable service and good motivation who had characteristic symptoms, responded quickly to medical treatment, and could be returned to duty; and (b) the nonvolunteer with poor motivation who had atypical symptoms, remained symptomatic until his release from service was assured, and entered the hospital repeatedly if an attempt was made to return him to duty. In 1953 Barrett at Brooke Army Hospital studied 40 duodenal ulcer patients for adequacy of social adjustment in their family, school, job, marital, and military relationships. She classified her patients into two groups: (a) Those with unsatisfactory social adjustment prior to the development of ulcer. This group included most of the patients with less than 2 years of service. In one fourth of these patients stressful situations were identi-

fied which might have played a role in the precipitation of ulcer (b) Those with previously satisfactory social adjustment were predominantly volunteers with more than 2 years' service. Areas of emotional conflict which might have been important in ulcerogenesis were recognized in 56 percent of this group in 73 percent these were of a nonmilitary nature. Combat was not a factor in the initiation of ulcer or in its recurrence. Other stresses peculiar to the military played only a small role in contrast to the hazards of personal life including marital and family difficulties. Motivation for military service was measured by the patient's expression of his attitude toward his current duty assignment toward entering the service and by his feelings of frustration or discrimination. It was poor in 90 percent of those with less than 2 years of service and in 60 percent of the others. Those personality traits said to characterize the patient with ulcer—striving for success, fear of failure, assumption of responsibility—were found in only half of her patients who had made a satisfactory social adjustment and not at all in the poorly adjusted group.

Although the two groups of patients described by Berk and Frediani¹ and by Friedman² correspond well with the groupings proposed by Barrett and confirmed by current clinical experience, it is probable that the difference between the groups is quantitative rather than qualitative. The patients of each group have failed in their adjustment and the inability of the physician to identify the area of emotional conflict is indicative only of its profundity.

The unusually high admission rate for ulcer in Europe during 1953 would seem to be explicable in the light of the foregoing. Kehoe listed the following environmental factors as contributing to ulcer occurrence, particularly in troops stationed in France: (a) difficulty in adjusting to primitive living conditions after being accustomed to modern comfortable facilities; (b) difficulty in obtaining milk and ambulant ulcer diet when assigned to field units; (c) monotony of life in rural French villages; (d) difficulty in finding suitable family quarters and of living on the French economy. He further states: "The stimulation of combat and the ability to perceive first hand the necessity for being in uniform may cause some patients with ulcer to sublimate symptoms which during monotonous periods of routine training flare up. One wonders if the same factors may not be operating here in Europe which thus far is a noncombatant area where the primary activity of the troops is training." In addition to the factors Kehoe has advanced, one must consider that American troops were no longer popular with either the French or the German civilian population. The Army was steadily losing its attractiveness as a career. Financial benefits were being curtailed and re-enlistments were at a very low rate. The Europeanized soldier was engaged in a rigorous

training program. He was rejected by the local population, his personal life disrupted by economic and other difficulties, and he was living in a tense international political situation that he was powerless to influence.

RECOMMENDATIONS FOR MANAGEMENT

A certain therapeutic attitude is required of the physician if patients with peptic ulcer are to be used as soldiers. The physician must believe that these men can perform effectively despite recurrent attacks of illness, and he must define for the patient the role of illness in a manner which does not create a chronic invalid and which minimizes the secondary gain from the illness. To accomplish this, an excellent doctor-patient relationship will be needed.

Palmer and associates have shown that many soldiers have long and useful military careers despite the handicap of recurrent peptic ulcer. Wise and colleagues evolved a plan of outpatient management which reduced the noneffective rate due to peptic ulcer to 0.10 per thousand average strength at their post. They emphasized again the point made by Barrett that personal problems rather than the stress of military service are the important precipitating cause of ulcer recurrence in most soldiers.

If we select a favorable group of patients to continue in the military service, what should we do to minimize the time lost through ulcer recurrence? The use of dietary programs and drug therapy during periods of remission of symptoms has failed to prevent ulcer recurrence in civilian life, and is often impracticable in military life. Limitation of assignment with a view to preventing military stress does not seem important, but may serve to avoid some of the problems of personal life which arise from the disruption of the family. It is not easy to give an answer here, for often ulcer recurrence seems to be precipitated by a visit home or the return to family from overseas duty. Perhaps the most important thing accomplished by assignment restriction is to keep the patient under the care of the same physician, who can give him support as needed, as well as early treatment of recurrent symptoms, thereby possibly avoiding hospitalization. In any case, there does not now exist a provision for limited duty as such, and past experience has not demonstrated this to be an effective method of preventing recurrence. Those restrictions are not only unnecessary but undesirable. If one elects to return patients with ulcer to duty, it must be recognized that the man probably has roentgenographic evidence of deformity which he can use to avoid unpleasant assignments, and that he will have recurrences of his ulcer which may require hospitalization from time to time.

The important points in the management of a soldier with peptic ulcer would seem to be:

- 1 To establish the diagnosis by roentgenographic examination using repeated studies as needed to confirm the diagnosis and to establish the fact that the ulcer has healed

- 2 To treat the patient by conventional measures of diet antacids and antispasmodic antisecretory drugs until he is symptom free, and healing is complete as shown by roentgenographic examination

- 3 To develop a strong doctor-patient relationship by the "therapeutic interview" and to obtain sufficient knowledge of the patient so that his problems and the areas of situational stress responsible for recurrence of his ulcer can be understood. If the physician does not have the time or inclination for this phase of treatment a medical social worker may be used as an assistant to obtain the information but all interpretations should be given to the patient by the physician. Any patients with personality defects which warrant administrative or psychiatric separation from the service should be discharged as soon as possible.

- 4 To relieve at least temporarily through superficial ventilation psychotherapy the resentment these patients harbor. This is probably as important as healing of the ulcer crater and sometimes takes longer.

- 5 To redefine the role of illness for the patient. Many soldiers think of an ulcer as something as bad as cancer and incurable. Because dietary restriction and drug therapy during periods of remission are ineffective in preventing recurrence the physician should assure the patient at the proper time that he is well that he can eat anything a reasonably prudent man would eat and can engage in full military duty without detriment to his health. He may be warned that under some strong emotional stress he may have a recurrence but that under proper medical care the ulcer will heal.

The disposition of the military patient with an ulcer is determined by three elements (1) the disease, (2) the patient, his motivation and emotional reactions, and (3) the physician and his knowledge and attitudes about the disease and about the patient. A study of the disposition made of the patients with ulcer in a large hospital or in the Army as a whole reflects primarily the attitude of the physicians, to a lesser extent the motivations of the patients and very little the effect of the disease itself. One is led to speculate on the possibility that duodenal ulcer occurs and recurs uninfluenced by any of our measures and without regard to the patient's relation to the military service. The approach to treatment recommended here may have some beneficial effects—if not in reducing the ulcer recurrence rate, at least in making

the patients more effective soldiers during remissions. The program would be immeasurably strengthened if it were administered close to home—by the unit surgeon or at the outpatient clinic at the soldier's home station.

SUMMARY

There has been an increased incidence of peptic ulcer in the U S Army in recent years accounted for almost entirely by increased incidence among troops stationed in Europe. Intensive training, a tense international situation, and other factors constitute a chronic stress which may be of causative significance, particularly because the patient can take no action to relieve this tension.

Large numbers of soldiers throughout the Army are rendered noneffective by peptic ulcer. It is in the interest of the military service to retain the services of these men when this can be done economically, i. e., as long as hospitalization for recurrent ulcer is supportable. Dietary regulation, antacid and antispasmodic drug therapy, and restrictions on place or type of duty often are not practicable and probably do not prevent recurrence.

Selection of a soldier with an ulcer for retention in the service based on study of his previous social adjustment and his personality is recommended. During this study a good doctor-patient relationship will develop which can be used to alter the patient's concept of his disease, minimizing its importance, stressing his ability to do full duty in the periods of remission, and endeavoring to have the patient recognize the relationship of emotional stress and symptoms. Patients with ulcers who have psychiatric grounds for separation should not be retained in the service.

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MEDICAL AND DENTAL OFFICER CAREER INCENTIVE PROGRAM

RALPH L. CHRISTY *Commander (MC) USN*

THE PROVISION of adequate medical and dental care for the Armed Forces is being seriously threatened by the alarming shortages and losses of career medical and dental officers. The problem is common to all three of the armed services, but was particularly emphasized in a letter of 23 March 1955 from the Surgeon General of the Navy to the Chief of Naval Personnel and the Secretary of the Navy, which pointed out that some 300 Regular Navy medical officers had resigned in the past 20 months, while at the same time only 37 new regulars were commissioned. The Dental Corps lost 150 officers, or four times the replacement rate, over a period of 33 months.

The Chief of Naval Personnel concurred in the seriousness of the problem and recommended accomplishment of all possible administrative actions to aid the situation, along with the formation of a tri-service group to recommend additional corrective action and required legislation. With the support of the Secretary of the Navy and his approval of the recommendations, the matter was presented to Frank B. Barry, M. D., Assistant Secretary of Defense for Health and Medical, the Honorable Carter L. Burgess, Assistant Secretary of Defense for Manpower and Personnel, and to the Department of Defense Health and Medical Planning Council.

As a result, the problem was assigned by the Secretary of Defense to the Task Force on Career Incentives, which handled the Career Incentive Pay Act of 1955 and the Survivor Benefits legislation. The Task Force was headed by a line officer, Rear Admiral E. W. Granfall, USN, and was augmented by representatives of the medical departments and of the personnel branches of the three services; thus, it included both line and medical representation. The Deputy Chairman, and officer who made the majority of the presentations, was Captain David L. Martineau, USN.

The Task Force has conducted a detailed exploration of the problem of attracting adequate numbers of career medical and

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dental officers for the Armed Forces This was studied from all possible sides including the professional and personal aspects the promotion retirement and compensation factors composing the economic aspects and the overall factors involved in the acceptance of military life and a military career

NEED FOR CAREER MEDICAL OFFICERS

First an examination was made as to why career medical and dental officers were needed and as to where and to what extent civilian physicians could or should be used Career military medical officers are required for several reasons including the following

1 One third of our 2 850 000 military personnel are overseas or on the seas and require uniformed medical personnel to provide medical care and to ensure healthy fighting men for combat readiness While uniformed reserve physicians can provide much of this care continuity and need for military and clinical experience require large numbers of medical personnel on duty for a full career or at least for longer periods than now provided through the 2 year draft

2 There are 2 000 medical facilities or units throughout the world many in remote locations each requiring one or more military physicians

3 Many specialties such as aviation submarine and atomic medicine medical logistics and readiness planning are for the most part peculiar to military medicine This was well summarized in a recent speech by the Honorable Dewey Short ranking minority member of the House Armed Services Committee who said

We have to have doctors who know how to prepare for the medical support of an amphibious operation We have to have doctors who know all of the medical problems of logistical support of land operations we have to have doctors who are familiar with the human physical limitations in the problems of peace we have to have doctors who are experts in field sanitation preventive medicine and all of our doctors must have some conception of what a military organization is how it functions and what their responsibilities would be if they were called upon to take command of a medical battalion

This important and unique publication is directed by the brilliant and distinguished leader of the military community of the United States Dr. J. H. M. N. H. MC USA C md R Ch ty (MC) USN C I E C F USAF (MC) C I R J Bedford USAF (MC) Dr E K Cushman Deputy Assistant Secretary of Defense (Health and Medical) —Editor Not

So all the time of a doctor in the Armed Forces is not confined to the treatment of people who are ill perhaps some doctors spend most of their time treating patients but when that doctor is serving in that capacity another doctor is studying a supply problem or a study involving the results of underwater demolition or the proper way to treat victims of nuclear warfare

So it is not quite fair to our armed services to compare the ratio of physicians to the civilian population and then conclude that the ratio in our armed services should more nearly approach that ratio The problem in our Armed Forces is to keep our people healthy and not wait to treat them after they are sick

4 Medical care for large numbers of dependents must of necessity be furnished by military medical officers overseas, as well as at isolated bases in continental U S and at activities in continental areas where civilian facilities and professional personnel are inadequate to meet the needs

The use of civilian physicians in every possible position, including all or most dependent care positions, was not considered desirable Civilian physicians would necessarily be started at salaries from \$1,400 to \$2,600 per year higher than the present starting salaries of military physicians and thus differential pays would be created among military and civilian physicians working in the same hospitals, dispensaries, or clinics In addition to this great disadvantage, such a solution would tend to concentrate the most satisfying and desirable professional billets in the hands of civil service physicians, thus leaving sea and foreign shore duty, and small dispensary and remote continental duty for military medical officers This would reduce the professional competence and proficiency of those military medical officers who did remain under those circumstances, and in addition would tend to result in the loss of the greater portion of present or future career officers

THE PRESENT SITUATION

Study of the present situation disclosed that in the past 3 years two regular officers have been lost for every replacement A turnover of nearly 45,000 medical and dental officers entering and leaving the services in these 3 years, to fulfill a mission requirement of some 16,000, has superimposed a terrific problem of training and retraining processing, security checks, loss of time in extra travel, et cetera This is expensive in dollars and is wasteful of scarce, highly trained manpower

With 96 percent of the gains in medical officers in this period coming solely from compulsory service extensive efforts have

been made to use physicians most efficiently and thereby reduce as much as possible the numbers to be drafted

An over all ratio of 30 physicians per 1000 troop strength was also imposed on the three medical services to economize still further in the drafting of civilian physicians. However the relatively short turnover period of 2 years combined with the 30 per 1000 ratio has made working conditions for the military physicians much less attractive with longer working hours much less time per patient and resultant generally reduced professional satisfaction. It has also forced the neglect of many aspects of the primary military medical mission. The large turnover of personnel often requires an excessive number of transfers including the regular career officers who usually are the only ones available for filling vacancies as the reservists come and go. This instability of assignment combined with necessary separations from family on sea and foreign duty has been a great deterrent to the acceptance of a career as a military medical or dental officer.

PRESTIGE AND PAY

The study also showed that the prestige of a military medical career has deteriorated materially in recent years. The prestige of a medical or dental officer has been adversely affected particularly in regard to rank because he is generally several years older than most other officers of his grade. Because the status of the military medical or dental officer must be based to a large extent on rank a condition not encountered in civilian life a military career has been considered to be seriously lacking in this respect. The necessary compulsory aspects of the special doctor draft law has also had its effect on the morale of career officers and has contributed directly to the lowered prestige of a military medical career.

The final overwhelming factor in the failure to choose a military career has been the inadequate financial return in relation to the years of education and training and in comparison with civilian opportunities. Heretofore there has been a reluctance with the services to seek additional special pay because of possible reaction of other officer groups. However detailed examination revealed several factors in this situation. Present pay scales and promotion criteria are predominantly geared to length of service. Thus a medical officer who requires 4 years of medical school and an internship to complete his education after graduation from college is 5 years behind his contemporaries in the service who entered immediately after graduation from college. As a result for example during the first 4 years of active duty after completion of internship, a naval medical officer earns less money even with the presently authorized \$100 monthly doctor special

policies by increased encouragement of attendance at professional assemblies and seminars and by provision of 2 years (including internship) constructive service for promotion purposes (instead of 4 years) for medical officers and 4 years (instead of 3 years) for dental officers in recognition of their additional years in professional medical or dental education. The latter will apply at present only to newly commissioned officers. Similar credit for officers already on active duty will require legislation.

Legislation has been recommended by the Department of Defense and is now under study by the Bureau of the Budget to provide this additional 1 year credit for promotion purposes to medical and dental officers now on the active lists. The proposed legislation would also provide longevity credit for pay purposes for these years of postgraduate educational credit. In addition in order to compete with the higher incomes available to civilian physicians and dentists, or with the generally greater earnings under better or more stable working conditions in other Federal medical services the proposed legislation would provide for an additional monthly contract pay up to \$150 for agreements to serve for periods of from 3 to 9 years. The details as to the exact amount and form of the additional pay are still under consideration and subject to change by the Bureau of the Budget or Congress.

BENEFITS OF THE PROGRAM

With the adoption of this whole program including the legislative aspects a young physician would enter the service after completion of internship in the grade of Captain (in the Army or Air Force) or of Lieutenant (in the Navy) at a starting salary of about \$775 per month. This salary compares favorably with the starting salaries of \$620 to \$700 per month of civil service physicians in view of the generally longer working hours of military physicians combined with the necessity for rather frequent moves, separation from family and assignment at times to essential but professionally less satisfying billets. The proposed military medical incomes however would still be considerably below those available in civilian practice.

As the present excessive turnover of medical officers is brought under control service physicians should have the advantages of more regular and somewhat more reasonable and shorter working hours than do their counterparts in civilian private practice. The value of the military retirement for physical disability or after 20 or 30 years or more of service is a distinct advantage to the military physician or dentist. Free medical care for the service man and free or low cost care for his family, commissary privileges and certain survivor and other benefits also favor his

choice of a service career. The opportunity to travel for duty in different parts of the world on a reasonable rotation basis is also considered an advantage by many. It is obvious, however, that under present pay scales and conditions, these latter advantages alone have not been sufficient to attract adequate numbers of career medical and dental officers.

It is believed that the provision of adequate career incentives by the enactment of legislation along the lines proposed, in addition to the other improvements in the attractiveness of a military medical or dental career, will make possible an increase in the number of career reserve or regular medical and dental officers to about two thirds of the requirements instead of the present less than one third, and thus will provide adequate stability. Such a career corps will eliminate the need for the special doctor draft, and the remaining requirements can then be filled by the draft of physicians and dentists deferred under the regular draft to complete their education.

A workable solution must and will be found. Adequate medical care for service personnel cannot continue to be provided under present conditions.

ADVICE TO YOUNG WRITERS

In promulgating esoteric cogitations and articulating superficial sentimentalities philosophical and psychological observations beware of platitudinous ponderosity jejune babblement and asinine affectations. Let your extemporaneous discantings and unpremeditated expiations have intelligibility and vivacity without thrasonical bombast. Sedulously avoid all polysyllabic propensity psittaceous vacuity and ventriloquial verbosity. Shun double entendre imprudent jocosity and pestiferous polluting profanity either obscure or apparent. Don't call names or use big words but talk plainly sensibly and truthfully. All of which is reminiscent of Disraeli's philippic for Gladstone. He was a sophisticated rhetorician inebriated by the exuberance of his own verbosity.

—Quoted by ERNEST J. ROSCOE
in *Science*

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AIR FORCE HOSPITAL FOR TRI SERVICE CARE

MAJOR GENERAL DAN C OGLE USAF (MC)

Surge General United States Air Force

IN THIS land of historic milestones we are assembled for a dedication ceremony which in itself is so important a milestone for Alaska for national defense, for the Air Force for military medicine and for the productive relationships between civil and military interests as well as between our three separate military departments. It is fitting that this significant Air Force hospital dedication ceremony take place in Alaska where the pioneer spirit that has made America great is still vital as was the spirit of those men and women who first peopled the forests and plains of our continental United States.

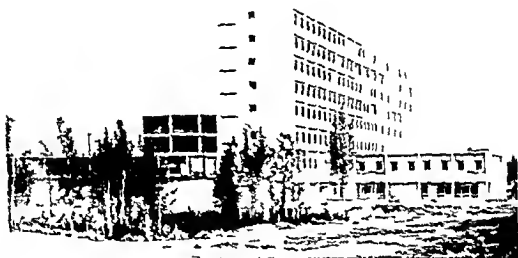
This dedication is a pioneer experience for our Medical Service as it marks the opening of the first major hospital in an extensive Air Force building program designed to support an ever expanding military medical responsibility. It marks the first new major Air Force facility designed and programmed to serve joint area requirements of three separate military departments. It serves as concrete notice to the American people as do many other hospitals of the Army Navy and Air Force that the various medical services are co-operating with each other to give American military men and women a health and medical service worthy of the world's finest and most deserving citizens. You should know that many of our airmen are cared for by the Army and Navy and in turn I can state that outpatient visits of Army active duty personnel at Air Force clinics now average more than 20,000 per month.

I must hasten to add that there is no intent or need of merging the military medical departments. Such services are necessarily part and parcel of the armed force to which they belong. They must be service identified in all phases of planning, training and support of combat missions or weapon systems peculiar to each department or to the global and operational environment where each must serve.

Military medicine is not a commodity to be purchased on the open market any more than is the infantry division, the battleship or a combat wing. Military medicine is a part of these.

Add: Headquarters of the new hospital, Elmendorf Air Force Base, Alaska, 4 Sept. 1955.

As the native meaning of the word Alaska implies, this is truly "The Great Country," and I am sure that in this setting and on this occasion we will capture a strong sense of dedication—not of this building alone, but of our very lives, minds, and hearts—to the protection of freedom, of national unity, and national security that these military forces represented here today have so long been dedicated to preserve. In this, The Great Country, we are inspired by natural vistas of grandeur, fitting monuments and symbols of America's strength and position as well as symbols of Him whose will has guided the development of our country since its beginning, whose will has given us the freedom that is a beacon for all people.



It is fitting also that this dedication be held and noticed in this land of such great strategic importance for the part that America must play in a world of threats and stress. It is significant that the world should note the attention we give, the benefits we provide, and the emphasis we place on individual health and welfare. Our military forces are not collective machines but are recognized individual men, women, and families devoted to the cause that freedom shall never be compromised.

This Alaska, which in size is one fifth that of continental United States and more than twice the size of the State of Texas, which extends west almost as far as Wake Island and beyond New Zealand, is a beautiful country of mountains, plateaus, and low lands where our country's highest peak stands as a symbolic outpost, a sentinel of eternal vigilance.

These statements of Alaskan statistics are primarily for those here not as familiar with the territory as are you local citizens.

This country, formerly called Russian America was ceded to the United States in 1867 after treaty of the same year had determined that the land could be purchased for the sum of \$7 200 000 At that time it was estimated that the population was in the neighborhood of 30 000 the major portion of which was native This country was known as the District of Alaska until it was created a territory by an act of Congress in 1912 The general ocean coastline of Alaska is about 4,750 miles However if you include the measurements of the coastline of islands bays inlets and rivers to the head of tide waters the coastline measures 26 000 miles a distance greater than the circumference of the earth Gold was discovered in the Klondike in 1896 and no one needs to be told of all of the other resources that Alaska has contributed to United States and world economy

This beautiful hospital which we are here to dedicate was originally proposed by the Department of the Army and subsequently indorsed by the National Military Establishment as a replacement for the temporary structure at Fort Richardson It was originally intended to provide hospitalization for all service personnel in the Anchorage area That it will do The project was approved by President Truman 14 April 1949 The original planning was under Army jurisdiction by agreement with the Air Force The architectural design was accomplished by the San Francisco offices of Skidmore Owens and Merrill By agreement with the Army the Air Force assumed responsibility for other budgetary and related actions incident to construction following the original planning The actual construction was authorized by Public Law 155 of the 82d Congress appropriations were provided by Public Law 254 of the 80d Congress in November 1951 Construction under supervision of Army engineers was started the 4th of March 1953 In its finished state we now see one of the finest hospitals supporting the Armed Forces it is certainly the largest service hospital in size and bed capacity in Alaska Its clinical facilities are modern in every respect and offer complete care and treatment for servicemen and their dependents These hospital services provide care for approximately 25 000 service personnel and an additional 15 000 military dependents This building is constructed of reinforced concrete with walls of concrete masonry It is built in three separate sections or wings seven or eight stories high depending upon from which side you view it Special engineering features have been incorporated to allow for earth tremor movements without endangering the structure The hospital has approximately 1 000 rooms including private semiprivate and 24 bed wards complete clinical facilities cafeteria Post Ex

change, recreation rooms barber shop and an air-raid shelter which can seat 500 persons if used as a theater The clinical and servicing facilities of the hospital are sufficient to expand the present 400 bed capacity to 600 beds by the addition of two floors This building has cost the United States Government more than the original purchase price of Alaska and all of us here sincerely hope that the services it can render to the Armed Forces and to this community will give ample return for the thoughtful planning, work, and money that have gone into construction



The Surgeon General, U. S. Navy Rear Admiral Bartholomew W. Hogan (MC) USN (left) is met by Major General Dan C. Ogle USAF (MC) Surgeon General U. S. Air Force as the former arrived at Elmendorf Air Force Base Anchorage Alaska.

For the past few minutes I have spoken of statistics. Statistics are interesting and necessary for a complete understanding of areas, buildings and activities but they fall far short of painting that more important picture of intrinsic worth and pur-

pose. A country is not the substance of its mountains, rivers and plateaus. Similarly, no hospital is a hospital by virtue of concrete, steel, marble, tile, whiteness, or gleaming equipment. The meaning of anything stems from its purpose and the extent to which those responsible for that purpose are dedicated to the cause or work they represent. If we are here today to dedicate this hospital, then I say we are here today for its first dedication; there should be repeated dedications. Each new day, each new staff must be dedicated to the highest standards of medicine and national as well as individual interests. We are here to dedicate ourselves and those who follow us that this hospital shall forever fulfill the purpose for which it was conceived—that the minds and bodies of our servicemen and their families may remain whole and effective; that they may be forever alert to maintain our national security and the freedom that is our heritage. Dedication is in truth an affirmation of faith. It is the means we have to combat the growth of doubts and cynicism and to combat a drift from faith—faith in whatever good thing that is ours to contribute to family, community, and country.

This day I feel honored indeed to represent the Air Force and the Department of Defense in the presence of civil officials and citizens of this Territory; in the presence of the United States military personnel assigned here; in the presence of the Assistant Secretary of Defense for health and medical affairs; and in the presence of the Surgeons General of the Army, Navy, and Public Health Service. We hereby dedicate this hospital and this medical service to the full sense of military medicine; to the proposition that it shall become a living part of this community; that it shall serve with equal devotion each of the three military departments; that it shall forever be a focal point of interservice solidarity and co-operation; to the purpose that its staff shall be tireless in their efforts to acquire the highest of knowledge and skill necessary to perform their part in preserving the strength and integrity of our Armed Forces. And finally, I would like to dedicate this entire audience to a reaffirmation of faith in America and to the torch of freedom she holds before the world. Such dedication should not be taken lightly, and the tasks and principles to which we are here dedicating this building and ourselves may be hard.

MEDICAL EDUCATION FOR NATIONAL DEFENSE THE MEND PROGRAM

JAMES R. SCHOFIELD, M.D.

PHYSICIANS today must be prepared to serve effectively in the Armed Forces or in situations of disaster handled by civilian agencies. For some years evidence has been accumulating that a majority of recent graduates of our American medical colleges are inadequately trained and motivated to assume these traditional responsibilities of the medical profession.

The Medical Education for National Defense (MEND) program is designed to acquaint the faculties of our medical schools with the problems of military medicine and of medical care of mass casualties, and with the solutions that are being developed to meet these problems. The 16 colleges of medicine presently affiliated with the MEND program have accepted the obligation of teaching the fundamental concepts related to this area of medicine, in order to better equip young physicians for their responsibilities as medical officers in service, and in civil defense. This may be accomplished by formal presentations to medical students and by increasing the appreciation of the problem by the faculty, so that the entire curriculum can be appropriately oriented. This article describes the MEND program.

In 1950 the Executive Council of the Association of American Medical Colleges appointed a subcommittee, later known as the MEND Committee, to study the existing medical curricula and to make recommendations regarding supplementation with whatever additional material might be needed by the medical graduate for effective service in time of national emergency.¹ As a result of this study, the MEND Committee recommended that a series of pilot experiments in curriculum supplementation be held at a few medical schools representative of the total group of 81 throughout the country. The schools selected were the medical colleges of Buffalo, California (San Francisco), Cornell, Illinois, and Vanderbilt Universities.

ASSUMPTIONS AND METHODS

Representing the American Medical Association and the Association of American Medical Colleges, the MEND Committee,

James R. Schofield, M.D., Office Address: Bureau of Medical Sociology,
Department of the Army, Washington 25, D.C.

Stanley W Olson *Baylor* Chairman John B Youmans *Vanderbilt*
Stockton Kimball *Buffalo* Lawrence Hanlon *Cornell* George V
Byfield *Illinois* and John B Lagen *California (San Francisco)*
proceeded on the assumption that whatever was done would have
to be soundly conceived from an educational point of view and
would have to be consistent with the educational philosophy
of each school Therefore it was agreed that

- 1 Each school should be free to work out its own program according to local custom

- 2 The individual program should be developed through the faculties of the respective institutions

- 3 The programs should be designed to stimulate students and to create appropriate attitudes as well as to teach appropriate material

- 4 Emphasis would be placed on professional rather than administrative and organizational topics and

- 5 The program would be evaluated as critically as possible

The five pilot schools began their experiment in the fall of 1952 and by January 1954 the Chairman of the Committee was able to give a detailed report of the educational approach to the problem as used at each of the pilot schools From this article one can see that the principle of individual faculty interpretation has been maintained

Two different approaches were used (1) Cornell and Vanderbilt deliberately avoided separate courses for MEND on the premise that the new material should be completely integrated into the regular curriculum (2) At the University of California a separate course in Civil Defense and Military Medicine was developed (3) At Illinois and Buffalo a combination of these two policies was adopted Material was presented to all four undergraduate levels at Cornell and Buffalo while at Vanderbilt Illinois and California special attention was first given to the freshman class with progression with that class year by year until all four levels could be affected by the changes in the curriculum The presentations were mandatory except for some optional showings of films in two of the schools

A number of guest speakers drawn from the Federal services visited all of the campuses in order to participate in the teaching program All of these visits were made in response to invitation and sponsorship by the local faculty The MEND Committee believe this to be one of the most desirable features of the program

From the beginning there was good acceptance of the program by students faculty and administrative officers of the colleges All five pilot schools have desired a continuation of their affili

ation with MEND and those faculty members have been very active in orienting newcomers to the program

SUPPORT BY FEDERAL SERVICES

The Army, Navy, Air Force, Office of the Assistant Secretary of Defense (Health and Medical), the U S Public Health Service, and Federal Civil Defense Administration provide the schools with necessary teaching materials, sponsor seminars in military medicine, and furnish visiting speakers at the invitation of the participating colleges

Financial support for the MEND program is provided by the Public Health Service and the Department of Defense. A grant is negotiated with each of the participating colleges for an average amount of \$11,000 to include a part-time salary of \$5,000 for a local coordinator, the balance to cover the expense of faculty travel and cost of teaching materials rented or purchased. The MEND program at its fullest possible expansion to all American medical colleges shall cost no more than an estimated 40 to 50 percent of the annual operational expense of the medical ROTC program formerly in operation. As MEND has developed, representatives of the Federal services upon numerous occasions have given written and public support to the program, and the several Surgeons General have more than adequately fulfilled their promises to provide teaching materials and support to the participating schools.¹⁻⁴

EXPANSION

Beginning with the academic session 1955-1956, the MEND program was extended to the following colleges: Tufts, Pennsylvania, Georgetown, Medical College of Virginia, Emory, Ohio State, Baylor, Wisconsin, Colorado, and Washington (Seattle). Michigan also participates in the program without financial support at this time. Present plans are to extend affiliation to 10 additional schools as of 1 January 1956 and continue to add 10 each year until all who desire affiliation can be given that opportunity.

MEND ACTIVITIES

Symposia

In order to acquaint faculty members with specific problems in military medicine, the participating Federal services have sponsored a number of teaching symposia attended by both medical faculty members and military physicians. Sessions have been held on the following subjects: "Blood and Blood Substitutes," "Psychiatry in Mass Casualty Care," "Biological Warfare," "Medical Care of Mass Casualties," "Shock," "Stress," and "Lepto-Spiral Diseases."

Faculty Travel

As new groups of faculty members affiliate with the program the MEND Committee and the Federal services sponsor a Coordinators Conference designed to give the MEND Coordinators of each school a briefing on the nature of the problems encountered by the military medical officer and what is being done to meet these problems. In March 1955 some 30 deans and coordinators visited New London Submarine School National Naval Medical Center National Institutes of Health Armed Forces Institute of Pathology Army Medical Service Graduate School Medical Field Service School in Brooke Medical Center and Air Force School of Aviation Medicine at Randolph Field. It is expected that the itinerary of the coordinators tour will be varied each year.

Individual faculty members of the MEND schools are encouraged to visit Federal installations where research and teaching are being done in order to awaken new possibilities for curricular change or supplementation. It is believed that travel by faculty members to the Federal installations is by far the most significant activity of the MEND program and such travel is supported by the largest item in the local budgets of the MEND schools.

Teaching Materials

All of the training films and professional medical films used by Army Navy Air Force Federal Civil Defense Administration and U S Public Health Service are available to the MEND schools and are widely used. Some films have been duplicated and copies incorporated in individual school libraries.

A considerable series of technical manuals handbooks and texts prepared by the Federal services are on special MEND shelves in the school libraries and are used in departmental teaching.

Pathology of Agents of Warfare

Dr. John L. Shapiro, Department of Pathology, Vanderbilt and I recently began working with pathologists at the Armed Forces Institute of Pathology and with medical officers at a number of other Federal installations in the development of an extensive collection of teaching materials on the subjects of cold injury radiation injury beta ray (fall out radiation) and systemic radiation effects trauma from missiles of all types burn injury and atmospheric and underwater blast injuries. The materials will take the form of photomicrographs and color lantern slides and will be reproduced and made available to the schools. We estimate that some 250 items will be included in the collection.

Visiting Speakers

An increasing number of medical officers and scientists are being invited to visit the medical colleges in the capacity of guest lecturers. The response by the students to this phase of the MEND effort has been excellent. It provides the young students with a direct opportunity to meet career service officers in person and to learn firsthand of the achievements of military medicine. A "speakers bureau" for MEND has been prepared and is growing rapidly due to the interest of medical officers and the strong support of authorities of the Federal medical services.

FIELD TRAINING IN MASS CASUALTY CARE

In an effort to introduce medical students and house officers to the problems of mass casualty care, the MEND Coordinator at Baylor, Dr. John Howard (now at Emory University), and Dean S. W. Olson last April organized "Operation Mercy," a civilian version of a mobile Army surgical hospital with a sorting station. To simulate reality, this unit was called out without warning, was completely equipped by four hospitals in Houston, and was transported 90 miles to the adjoining city of Beaumont in response to a practice distress call.

Two hundred and fifty major surgical "casualties" had been tagged and scattered around the disaster area. The sorting station was established in a warehouse, the hospital in an elementary school. Distant evacuation to Houston was by rail transport. Litter bearers brought the casualties to the sorting area where triage was effected and necessary resuscitation done. Appropriate casualties were moved to the improvised hospital. There they were prepared and draped, and indicated surgical procedures were timed. The first "patient" was admitted to the improvised hospital 5 hours and 15 minutes after the initial alert had been received in Houston, 90 miles away.

Records of all medical treatment and disposition were kept and later studied by the students under direction of the Department of Surgery. Visiting medical officers who served as judges favorably evaluated this type of civilian training maneuver and indicated that much of the difficulty and confusion existing in a disaster or combat area had been successfully reproduced. Several other MEND schools are investigating this plan as a means of orienting students to mass casualty care.

SYMPOSIUM ON BASIC SCIENCES IN AVIATION MEDICINE

The first scientific session sponsored by MEND during 1955-1956 will be held at the School of Aviation Medicine, Randolph Field, 14-15 November 1955. The Air Force and Navy are presenting a program that should be of interest to professors of

physiology biophysics biochemistry pharmacology and pathology Eight sessions will include consideration of Biological effects of decreased atmospheric pressure biological effects of increased atmospheric pressure biochemistry in aviation medicine radiology in aviation medicine investigation of biological causes of aircraft accidents decompression sickness oxygen poisoning and chronic adaptation to decreased oxygen consumption In addition to the formal discussions there are to be visits to laboratories demonstrations of research results and informal discussion sessions It is anticipated that this is the first of a series of annual symposia on Aviation Medicine to be held at different air bases in the country

Other symposia during March and April 1956 will concern Cold Injury and Infectious Diseases

By special invitation MEND faculty members are to attend the 6th session of the Association of Military Surgeons which will be devoted to problems of mass casualty care

CONCLUSIONS

It is obvious from a review of MEND activities that the experiment has been successful and that the method is achieving wide adoption There is no fixed plan or mandatory curriculum imposed on a school affiliated with MEND each faculty is encouraged to go its own way using the experiences of others as it chooses and seeking fresh approaches to the problem of curricular modification There can be no question of Federal control over the faculty of medicine rather there is an honest and sensible encouragement for civilian and military medical authorities to meet and discuss their individual and common problems and to share ideas for the mutual benefit of all concerned

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Clinicopathologic Conference

U S Naval Hospital Philadelphia Pa

DYSPNEA AND PTOSIS

Summary of Clinical History A 48 year old man's illness began five weeks prior to admission with "sour stomach" and anorexia. Pain in and about the left eye was present for three weeks prior to admission. Ptosis of the left upper eyelid with difficulty in moving the left eye developed, disappeared then reappeared shortly before admission. A physician told him he had heart trouble and gave him three tablets of digitalis daily, plus "shots" to make him lose water. Previously he had been receiving one tablet of digitalis daily for eight years for pulmonary emphysema productive of exertional dyspnea and orthopnea. His shortness of breath and fatigability increased during this illness. There was no weight loss.

His father and one sister died of tuberculosis. His mother died of old age.

Physical Examination On admission he seemed mentally dull, pale and only partially oriented. His temperature was 98° F, pulse, 44, respiration, 16 and blood pressure 126/65 mm Hg. There was ptosis of the left upper eyelid. The right pupil reacted well to light, on accommodation and on consensual stimulation. The left pupil was slightly larger than the right and reacted poorly to light, little if any on accommodation, and poorly to consensual stimulation. Right external ocular movements were full; the left were limited to minimal internal rotation. Diplopia was present; there was no exophthalmos and by confrontation visual fields were full. There was moderate arteriovenous compression of retinal vessels but no papilledema. The facial muscle movements were normal. No objective changes in facial sensory reception were demonstrated. The tongue was red and smooth at the tip. Percussion over both lungs was hyperresonant and breath sounds were distant. The cardiac apical impulse was not visible. The heart sounds were distant and no murmurs were audible. The car-

Cap C ut y G Cl ss (MC) USN Commanding Officer F m the P th l gy S rv c
C md J h D L g t (MC) USN Ch L

diac rate was 50 beats per minute with an occasional premature contraction. The abdomen was soft and not tender to palpation. The liver and spleen were not palpably enlarged and there were no masses. There was no pedal or pretibial edema. Postural hypotension was noted, one determination being 82/64 mm Hg sitting, and another 110/72 mm Hg supine.

Laboratory Studies The red blood cell count was 5 million per cu mm, hemoglobin 13.9 grams per 100 ml, and white blood cell count, 9,600 per cu mm, with 45 percent neutrophils, 51 percent lymphocytes, 2 percent eosinophils, and 2 percent basophils. Urinalyses showed an occasional white blood cell and 0 to 2 red blood cells per high power field, and a specific gravity of 1.003. Roentgenograms of the skull showed erosion of the posterior clinoid processes. A nodular noncalcific density about 1 by 2 cm was seen on the roentgenogram of the chest in the left upper lung field at the level of the first interspace anteriorly. The heart and aorta appeared normal.

An electrocardiogram revealed a sinus bradycardia with a rate of 48 per minute with an occasional premature ventricular contraction. The P-R interval was 0.20, QRS 0.10, and Q-T 0.43 second. P waves were normal. The QRS complex showed a small R, deep S in leads I, aVL, V₁ - there was a small Q wave in II, III, aVF, and V₄. S waves were present through V₆. The RST segment was slightly depressed in V₁, and moderately depressed in V₂ and V₃. The T waves were low but upright in lead I, inverted in leads II, III, aVF, and V₁ - ₃, diphasic in V₄ and aVL, isoelectric in lead V₅ and upright in aVR. A prominent U wave was noted. The axis was +90.

The tracing was interpreted as borderline low voltage and nonspecific ST segment deviation and T wave changes. The possibilities of electrolyte imbalance and/or metabolic disease (hypothyroidism) present themselves. Emphysema could also account for some of the changes noted.

Blood chemistry was as follows: Serum chloride 102 and potassium 4.74 mEq per liter, glucose 117, and blood urea nitrogen 11 mg per 100 ml, total protein 6.3 (albumin 4.3, globulin 2.0) grams per 100 ml. Findings of the Kahn test were negative. Lumbar puncture on the fifth hospital day yielded slightly yellow fluid under 80 to 90 mm of pressure. No blood cells were reported and the protein was 70 mg per 100 ml.

Course in Hospital During his hospitalization the patient had occasional episodes of headache with sudden onset, followed by blackout with involuntary urination, cold moist skin, and "muscle spasms." On the twelfth hospital day findings of an arteriogram of the left carotid were negative. The day following he

developed paresis of the right lateral rectus muscle and limitation of upward gaze of the right eye, with dilatation of the right pupil and failure to respond to light. The patient became more apathetic but remained fully conscious. He was found dead in bed at 0435 hours on the fourteenth hospital day.

DISCUSSION

Doctor Kaplan To summarize our findings in this stimulating case we have a 48-year-old man whose history encompassed that of tuberculosis in his family his own past history being that of exertional dyspnea orthopnea and emphysema of apparently eight years duration. We note that he had been on digitalis all of this time "for pulmonary emphysema productive of exertional dyspnea and orthopnea. We also have been told that for some indeterminate length of time apparently a matter of several weeks he was on three digitalis pills a day and I assume that that was up until the time of admission. This is a rather prodigious amount of digitalis. His last illness was that of five weeks of anorexia and sour stomach and I take that to mean the man was probably complaining of nausea. He had progressive shortness of breath noticeable ptosis of the left eye and difficulty in ocular movements of the left eye. He had a subjective complaint of diplopia and also pain in the area of the left orbit. The significant findings were mainly confined to cerebral signs in a dull poorly oriented patient with a temperature of 98° F and a pulse rate of 44. His left pupil was larger than his right. All of the pupillary reflexes were diminished on that side. We are not told whether he had corneal anesthesia or not. His external ocular muscles were paralyzed completely on the left side except for minimal internal rotation. We are also told that by confrontation his visual fields were full but perimetry was not done so central scotomata might still have existed. There was no papilledema.

The blood cell count was normal. I am surprised that with such a long history of emphysema and presumably of cardiac difficulties there was no polycythemia. One urinalysis is given which is of no particular help except for the provocative specific gravity of 1.003. We are not told whether this man had polyuria or polydipsia suggestive of diabetes insipidus. In a cerebral lesion this certainly would have to be considered an important clinical sign. Lumbar puncture revealed "slightly yellow fluid and an elevated protein, no increase in cells, no increase in pressure. The other thing we are told is that this man's course was downhill. He was complaining of progressively severe headaches. As a terminal event the right eye was involved as well as the left. He had what were apparently convulsive seizures, blackout with involuntary urination, cold moist skin and muscle spasms.

I try to put all of these symptoms together. The first thing that I think of is an intracranial lesion, the nature of which is not readily apparent. You have to think of primary lesions such as pituitary lesions, cavern-

Lt. Allan A. Kaplan (MC) USNR, Wnd Off er Medical Service

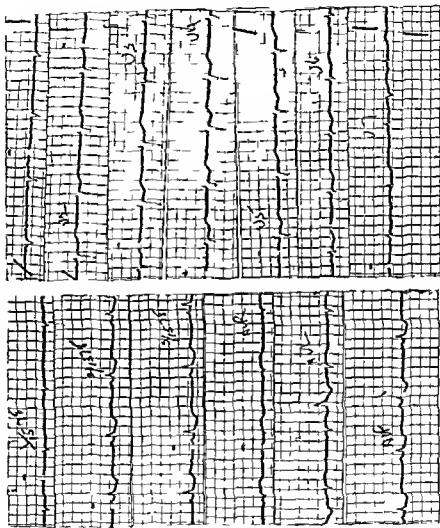


Fig. 3. ECG tracing in patient with acute myocardial infarction, lead axis at 90° .

shift to the left. We notice that the S-T segments are depressed in leads V_2 , V_3 , V_4 , V_5 , and V_6 with the initial portion of the T wave being inverted and the terminal portion being upright. This terminal upright may possibly be a U wave. I think it is fair to say that with this marked right axis, the depression of the S-T segments and the marked clockwise rotation across the precordium we certainly are dealing with a right ventricular strain pattern. From this single tracing it would be impossible to say whether this was an acute or chronic cor pulmonale but when we examine the clinical history we see that this man had emphysema for many years. I think we are on safe grounds by concluding that we are dealing with a chronic cor pulmonale. The possibility of digitalis intoxication is brought up by the large amounts of digitalis that we know this man was getting. I would not be inclined to think that this tracing shows signs of digitalis toxicity. I think that the S-T segment depressions and the terminal upright T wave certainly show the effect of digitalis but I believe that the slow rate was from other sources probably in this case cerebral. The occurrence of the premature ventricular extrasystoles are not frequent enough to warrant the diagnosis of digitalis toxicity. Another factor against it would be the normal P-R interval. I must admit from the history I am surprised that more digitalis effect is not noticed.

Now let us see whether we can put this story together and come up with an answer. From what we have seen we are rather certain that this man had emphysema. We are not sure of the cause of this. There was no mention of asthma in his past. There was no mention of anything hereditary. I am surprised that there was no polycythemia but this is not always found in this type of problem. The cardiac signs that we have seen—the pulmonary artery dilatation on x-ray examination, the signs of right ventricular hypertrophy on the EKG—would certainly go along with an obstructive emphysema. I don't believe that the emphysema played a major part in this man's demise however. A question of digitalis intoxication has come up. We know that this man had been on large doses. We know that certain central manifestations were apparent and yet we find an absence of gastrointestinal symptoms—no nausea, vomiting or diarrhea. We are not told of any disturbance of color perception. The electrocardiogram does not show any definite hyperirritability of the ventricular myocardium and there is no great degree of block at the AV node so I think we are forced to conclude that the slow rate was on a basis other than digitalis intoxication.

This leaves us with the brain lesion. We have general symptoms such as lethargy, anorexia and personality changes, the man being described as having been dull and unresponsive. We have the slow pulse, the elevated protein in the spinal fluid and what appears to be some xanthochromia. The specific localizing signs that we have are mainly left eye signs with involvement of the left third, fourth and sixth cranial nerves and the x-ray film has shown us that the sella turcica was eroded. We usually think of this as being a localizing sign but if

has been pointed out that any increased intracranial pressure may cause atrophy of the clivoid processes. I think we are forced to the conclusion that our lesion was in the area of the sella turcica with involvement of the cavernous sinus mainly the third fourth and sixth cranial nerves. The lack of papilledema and the lack of increased cerebrospinal fluid pressure on spinal tap does not militate against a lesion in this area. We know that the usual causes for papilledema are blockage of the internal cerebrospinal fluid mechanism with involvement of the lateral ventricles the aqueduct of Sylvius or the foramina of Luschka and Magendie in the posterior fossa. Around the pituitary the venous system is usually not involved and therefore no great increases in pressure need be expected. Papilledema is most apt not to occur with a lesion in this area.

Now let's examine our possibilities. Could this have been a cavernous sinus infection? This has been described as involving the third cranial nerves mentioned but the absence of fever the absence of leukocytosis in the cerebrospinal fluid the absence of signs of inflammation and venous stasis per orbitally all rule against this possibility and I think we are safe in dismissing this. Could this be a pituitary lesion? so we would have to decide whether it was above or below the diaphragma sellae. The usual lesions below the diaphragma sellae are chromophobe tumors which destroy the active elements in the pituitary but we are not impressed by a very severe panhypopituitarism in our patient. What told the patient was listless anorexic. We have urinary specific gravities of 1.003 so we are not sure whether there is a diabetes insipidus present. The possibilities of an acidophilic tumor or a basophilic tumor are likewise considered unlikely possible causes of the lack of specific endocrinopathies. The lesion above the diaphragma sellae that we would have to consider would be a craniopharyngioma.

While these remain possible there are several things that militate against them. The craniopharyngioma usually occurs in younger people usually between the ages of 10 and 20. The craniopharyngiomas are frequently calcified which this lesion apparently was not and does not usually extend far enough laterally to involve the oculomotor nerves. The first sign that these sellar tumors are usually present is in the optic chiasm producing central scotomata. Again these tumors are not so useful as inducing diabetes insipidus by disrupting the hypothalamic fibers to the posterior pituitary. This is an unknown factor in the problem.

We are then forced to look for some other factors for our lesion and the logical place with the pathology we have before us is the lung. This was familial history of tuberculous so we could assume that we are dealing with a tuberculoma which frequently involves the base of the brain. Again with the lack of fever lack of cells in the cerebrospinal fluid and the rapid downhill course this is a rather unlikely possibility.

We must consider another type of inflammatory lesion that of a brain abscess secondary to pulmonary bronchiectasis. It is known that in some few cases of long-standing bronchiectasis brain abscesses occur but again we are missing the expected signs of fever and of leukocytosis in the cerebral spinal fluid. As I first read this protocol and noticed the mention of ptosis and of a lesion in the left upper lung field I thought of a Horner syndrome but on closer inspection this does not hold. We have no myosis no mention of decrease in homolateral facial sweating and no enophthalmos all of which are the usual findings in Horner's syndrome. Also Horner's syndrome is not productive of ocular palsies which were very definite in this patient.

It is well known that in about one third of all patients with carcinoma of the lung we have brain metastasis. Though it is not a common occurrence these metastases may go directly to the pituitary gland and cause the condition that we see here of erosion of the sella turcica and the slow destruction of the functioning pituitary tissue. Lastly we must look for even more distant sites. If this lesion in the lung can be considered a metastasis we have to think of sites that will metastasize to both lung and brain. The lesions that come to mind are hypernephromas, adrenal gland carcinomas or thyroid carcinomas. We have nothing in our protocol to incriminate these structures so they are merely mentioned for completeness. To sum up once more then we are dealing with a rather rapid downhill course of a man with emphysema, pulmonary hypertension and a lesion in the upper lobe of the left lung. We have cerebral involvement which localized in the area of the pituitary destroying the sella turcica and involving the cavernous sinus and its adjacent structures the ocular cranial nerves. We are told that as a terminal event the right ocular nerves also became involved and we might therefore conclude that this lesion expanded in both directions involving both cavernous sinuses and their structures. We are also told that the patient had convulsions as a terminal affair and if we are hypothesizing metastasis to the brain we are within our rights to postulate another metastasis to the motor cortex. With the whole problem put together then I am left with just one diagnosis so I'll stick my neck out on this being a bronchogenic carcinoma with multiple metastases to the brain the primary one involving the pituitary gland, sella turcica, the left cavernous sinus, the left third, fourth and sixth cranial nerves and perhaps the right cavernous sinus and the same nerves on that side.

Doctor C pro: In discussing this patient there are several basic factors to be pointed out. The most important I believe is that although he was chronically ill for years his actual terminal illness was of brief duration—about seven weeks. Another factor is that his death was not due to a generalized wasting illness but rather to one of disturbed and interrupted vital functions.

First we e th symptoms of fatigue and shortness of breath. We can account for this to some xte t t least on the basis of pulmonary emphysema. Th emphysema was not too severe i that there was no marked chest fixation or clinic l evlence of r ght he rt strain. The les on f u d in the ch st x ray in the left upper lobe w angle. It s not difficult to correlate the findings n the che t and brain for in both e plast c nd infectious disea es these organ are frequently both involved. As to t mors Ferguson cited by Norris nd Land s rep rt d th t in 29 cases of m tastatic b ain tumors nine were of pulmonary o g n. Doquet fo nd 37 pe cent of 105 c ses and Fred 47 percent of 19 case.

Th spe d to the bra n of pulmo ary neoplasms a d infections can be either by direct v scular p netrat n or via the posterior bronchial veins or the v rt bral plexus. Bronchogenic tumors and many v ried fections tend t metastas ze to th brain. In cont ast t is extremely rar for p mary brain les on to metast size to the lungs.

Our n xt effort hould be to loc lize the obvious br lesion in th s patient. It ev d ntly was n t easy b caus ceteb al angiograms were attempt d. W ote first the ab ence of choked d k. The oculat gns tell us that the lesto ffectd the r ght oculomotor nerve. Th earliest s g were un lateral. Th s nerve rise from the nucleus in the gray sub ta ce in the floor of the cer b l aqueduct and xtends in fto t of the aqueduct for sh t t dist nce into the fl or of the third ventricle. Fibers th go forw rd through the tegmentum ted nucleus nd medial s b tant a ngrt emerg g from the ocul moto ulus on the medial side f the ceteb al peduncle. It l o ha fibers to the lary ganglion. Si ce this n rve controls convergence ccomm dation nd sph ncter fibers of th tris b s des the usu l muscles we know t s involved. The b e ce of exophthalmos puts the le on beh nd the orbit l am against a f ntal le ion n that ght w s nt ct the psyche nor too berr nt and there w s no disturbance of smell o speech. The ntract usual f ld ate aga nt an ocpital def ct. The basal ganglia seem int ct because of the un l teral symptoms. Not to waste time it seems th les on here is typical of those n the area of the m d brain particularly of the qu drigeminal pl te mo e o of the colliculi. Plate les o s are usually bil ter l. Al si n on the left in the colliculi would tend to comp s the ocul m to a d abducent nerves along th aqueduct of Sylvu. If it ext ndeu into the red nucl s there would b ataxia nd tremo. Th s t seem the l s n would be more loc lized i the left coll cul and ed n cleus. It could almost be classified as a Werber s syndrom (th t of paralysis of the thid nerve nd some evi de ce of hemipleg a n the oppo t sid). As reg ds this ca e a mid br in loc ti wld also explain the ero on of the poste ior cl n d pr ce ses. Pres re o the aqueduct of Sylvius wld c e the par x ysmal headaches sy cope and ro c spasms—the yndome nvolvg the third ve tr l. Further pre s e co ld cau e rh bradycardia. Vagal bradycard s mprobabl this c e.

As usual we always try to explain all the signs and symptoms on the basis of one causative agent. The hardest finding to correlate is that of the abnormal EKG. I believe we could discuss this for some time. The S-T segment and T wave abnormalities are nonspecific. In epicarditis the changes are often nonspecific. Since we are looking for a single diagnosis let us consider pericarditis. Frequently pericarditis particularly in tuberculosis and allied granulomatous infections is asymptomatic. In any case of pulmonary infiltration of the demonstrated configuration and of a brain lesion bronchogenic carcinoma would be the prime suspect. It however does not involve the pericardium other than by direct extension locally or from a metastatic lymph node. This is not apparent here. Bronchogenic carcinoma also is a relatively slow growing lesion. It would seem unlikely that a brain metastasis of this sort would cause death in such a short time.

Thus we come to tuberculosis. Pulmonary and cerebral involvement in this disease is of course not uncommon. Brain involvement however is usually secondary to miliary disease and although miliary disease can be considered I cannot recall a case with death ensuing in such a short time without evidence of wasting fever and terminal spinal meningitis. A single tubercle could be in the brain but I wonder if in its granulomatous state it could be guilty of such localized and fatal effects. Regardless though possible even with adrenal involvement I tend to hedge on either carcinoma or tuberculosis as a single cause. I might add that perhaps I'm swayed by the fact that either answer would seem somewhat too easy for a case in this conference.

In the protocol there was one other statement that bothered me. It was "The tongue was red and smooth at the tip." I wonder if it was sore too. This certainly is a benign statement but it brings to mind another entity. Fungus infections seem to prefer the edges and tip of the tongue. One could certainly not exclude one of these as a cause of the pulmonary lesion. Actinomycosis is one of the most common. As a cause of pericarditis and of a lesion in the brain it is very rare. In the brain however it amounts to a fulminating disease and is associated with extreme fatigue. The use of the term "yellow" rather than "xanthochromic" in the description of the spinal fluid is also suggestive. Actinomycosis has been said to cause a yellow spinal fluid. Actinomycosis could thus cause all the signs and symptoms and findings in this case. Against it though is the fact that it is normally manifested in rather grossly evident disease especially about the neck affecting the lymph nodes and often the skin. It may originate in the sinuses. Was there any evidence of dermal granulomatous disease in this case?

Doct. Rut. No

Docto C p. Regardless the diagnosis I consider the most likely as a single entity is actinomycosis involving the lung, brain and peri-

Lt. Comdr. D. and B. R. I. (MC) USN Ret. a. t. 2. th. log. S.

cardium As Doctor Kaplan has stated bronchogenic carcinoma statistically much more likely than actinomycosis involving the lung base and pericardium Tuberculous I consider unlikely

Dr. Aro I would like to say something about the arteriogram here because of the fact that one of the discussers thought that it had been done because of clinical difficulty in localizing the lesion This was not so much the reason for doing the arteriogram as was the clinical diagnosis of an aneurysm This history and the clinical findings I think were fairly in keeping with an intracranial type of aneurysm of the anterior communicating artery on the cavernous sinus and giving the so-called cavernous sinus syndrome which consists of partial or complete palsy of the third, fourth and sixth nerves and also the pain characteristic of the first division of the trigeminal nerve together with hyperesthesia in the forehead which we elicited when we first examined the patient Clinically we had to localize the lesion at the base and aneurysm was the first choice as a type of lesion Other possibilities considered were similar to those already mentioned but malignancy at the base was for most of these because of the rapid course and it became most likely when the aneurysm failed to materialize Thus the arteriogram was done to investigate the possibility of an aneurysm rather than to localize the lesion which was believed was in or near the cavernous sinus

Dr. McMillan Well I'll make a comment on this Here a man who had been afflicted with emphysema for a number of years but who had a rather rapid terminal illness A focal lesion in the midbrain would not account for his sensory deficit which was apparent on admission and the progression of this confusion could only be considered as due to toxic or other destructive change in the brain The EEG—well I'm going to tick my neck out On the basis of seeing cases similar to this I would like to make a first choice of tuberculous or a similar chronic granulomatous lesion involving and encircling the midbrain and finally terminating with Pseudotumor syndrome the paralysis of upward gaze from a lesion in the oculomotor region Besides this the evidence could be a diffuse process involving the cortex of the brain For some strange reason we do sometimes see tuberculous meningitis missed because there may be no high cell count or meningeal rigidity until almost the terminal stages

Dr. Kaplan The only thing which wasn't mentioned in the protocol but which was mentioned when Dr. Palgon read the x-rays was that perhaps there was some involvement of the phenoidal aneurysm This is very possible I remember thinking at that time that perhaps we are dealing with an adenocarcinoma arising from the sinus lining working its way up through the base and eroding into these areas thus involving the whole thing That a long history of changing my original diagnosis but I think it should be mentioned

L. N. L. Ar (MC) L. N. R. V. Surgeon General S. V.
Capt. J. H. F. M. Mull (MC) L. N. Ch. F. N. Topography S.

Clinical diagnosis

Aneurysm, internal carotid artery

Dr Kaplan's diagnosis

Bronchogenic carcinoma, with metastases to brain and pituitary

PATHOLOGIC FINDINGS

Dr. Rul The diagnosis in this case is bronchogenic epidermoid carcinoma of the lung with metastases in the sella turcica eroding the posterior clinoid processes and extension to the left third fourth and sixth cranial nerves the area of the tuber cinereum and the right cerebral hemisphere. This finding in this patient points up the fact that the size of the primary pulmonary lesion which in this case was about 2 cm in maximum diameter has no necessarily constant relationship to its curability by resection. The primary lesion was of relatively undifferentiated epidermoid nature (fig. 4). The mass in the sella turcica filled the sella and destroyed portions of the posterior clinoid processes. The sphenoidal sinus was opened and found to be normal.



Fig. 4. Photomicrograph of histologic section showing primary carcinoma ($\times 180$)

As the third fourth and sixth nerves proceed toward their exit to the orbit they are closely adjacent to the sella turcica. This lesion had extended laterally to involve these nerves on the left. No anatomic reason for the terminal palsy of the right sixth nerve was apparent at

autopsy There was an intimate relationship of the tumor to the residual anterior lobe of the pituitary (fig 5) which although encroached upon by tumor retained as judged by the morphologic appearance its viability Invasion between the bundles of a left cranial nerve probably the oculomotor was histologically demonstrable (fig 6)

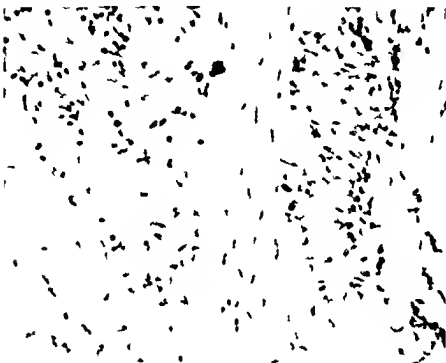


Figure 5 Photomicrograph showing intimate relationship between anterior lobe of pituitary (left) (180)

The extent of the lesion upon the pituitary gland brings up the question of how much hypopituitarism is present Clinically perhaps the extreme fatigability of which this patient complained may be related

From the microscopic appearance one would say that a degree of secondary hypofunction of thyroid adrenal and testes existed The thyroid acini were normal sized the lining epithelium was very flat and the colloid showed no sclerosing and tended toward basophil All these though not necessarily indicative are usually found in hypothyroidism It is of interest that in the blood of the EKG hypothyroidism was suggested The adrenal cortex was thin and made up chiefly of zo glomerulosa with thin fasciculi and tubular zones Increased numbers of eosinophils were present in the liver spleen and bone marrow perhaps due to decreased adrenal cortical function The testes showed absence of spermatogenesis and increased testicular fibrous tissue a step toward secondary atrophy

Within the brain there were two hemorrhagic lesions within the cerebrum which appeared microscopically as hemorrhagic infarcts. The larger of the two was subjacent to the right cortical motor projection area and contained tumor tissue in the center (fig 7). It would have been of interest to know if the epileptiform seizures were Jacksonian.



Figure 6 Photomicrograph showing mass on of tumor about 1/2 s of the cranial nerve ($\times 180$)

A third lesion 1 by 1 by 1.5 cm was located in the anterior hypothalamus at the tuber cinereum. This lesion apparently compressed the rostral portion of the third ventricle that is the optic and infundibular recesses. It had not given rise to obstruction of the ventricular system sufficient to cause dilatation of the lateral ventricles. It was hemorrhagic and composed of epidermoid carcinoma similar to that observed in the lung. The optic tracts were adjacent to tumor but no involvement of these by neoplasm was seen.

In this area are located nuclei which control water balance and the parasympathetic nervous system. It is of interest that the only two recorded urinary specific gravities were 1.003. Volume of urine output is unknown but no observation of polydipsia or polyuria was noted on the patient's chart. The stimulation of the parasympathetics may have been responsible for the bradycardia and postural hypotension.

Other symptoms usually associated with hypothalamic involvement that is sleep disorders and loss of body temperature control were not present.

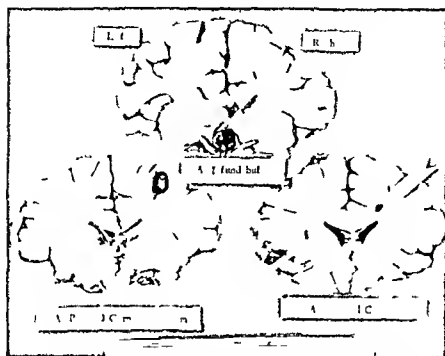


Fig 7 G d l i on / the the m i a s t a s e s w i t h t h e b r a

In respect to the long-standing history of emphysema bullae were present in both lungs and it is likely that some degree of pulmonary hypertension existed as attested to by subintimal hyalinization of small pulmonary arterioles and gross and histologic evidence of right ventricular hypertrophy.

Anatomic diagnosis

Bronchogenic carcinoma with metastases to pituitary and hypothalamus

Dr. P. D. L. Th. has been a most interesting and instructive case for everyone and the discussion have presented the material very well. I think one of the most important things for us to take away with us is that many of the central nervous system lesions are metastatic in the broad sense that they are subsequent to or caused by afflictions inflammatory or neoplastic of other parts of the body. Even lesions resulting from trauma are frequently concerned. Also the primary focus inflammatory or neoplastic most frequently is in the respiratory system. In the case of neoplasms Kernahan and Syre stated. Figures from various sources show an incidence of metastatic tumors ranging from less than three to almost 40 percent of all tumors found in the central nervous system. I think that the high figure 40 percent is most nearly true in general hospitals. The authors quote K. Fe's review

of 100 metastatic brain tumors from their laboratory in which he found that " more than one third originated in the lungs slightly less than one fourth arose in various segments of the gastrointestinal tract while about one tenth originated in the breasts and a similar number took origin in the kidneys In connection with our case recent reports by different workers show that an appreciable number of patients as much as 10 percent with bronchogenic carcinoma present themselves primarily with signs and symptoms of brain tumor

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CORRECT USAGE PREFERRED

I have frequently read and heard the phrase more preferred Is this a misuse of words? The term *preference* is derived from two Latin words *prae* and *ferro* and means literally to bear or place before (something else) Thus a student who goes to the movies before studying his lesson prefers on that occasion at least the show to his studies There are no *degrees* of preference A is before B or B is before A not more or less before If several objects are presented for choice the whole group can be arranged in a preferential sequence but still there are no degrees of preference

Confusion comes from the fact that something does vary in degree One object or response is more desirable more pleasant more acceptable better liked than another There are degrees of desire pleasantness acceptability appetite, liking etc but not degrees of preference

—P T YOUNG

in *American Journal of Psychology*
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CASE REPORTS

Alopecia Universalis in Cirrhosis

WILLARD R. WARREN *M.D.* for MC USA

ALTHOUGH some loss of hair is not uncommon in Laennec's cirrhosis alopecia universalis is generally assumed to be rare. In spite of a report by Lloyd and Williams that they found a 75 to 100 percent loss of body hair in 12 of 46 male patients with severe cirrhosis standard textbooks of medicine and diseases of the liver do not mention alopecia universalis among the complications of cirrhosis. Similarly dermatology texts fail to incriminate cirrhosis as a possible cause. Recently an additional patient was observed who developed universal alopecia coincident with and possibly as a complication of Laennec's cirrhosis.

CASE REPORT

The patient, a 46-year old white man, was admitted to the hospital on 3 October 1953 with the chief complaints of vomiting and diarrhea of 36 hours duration. He had felt well until about 3 weeks before admission when there was an onset of anorexia, lassitude, malaise, insomnia, and dark urine. On 2 October he developed nausea attended by frequent vomiting and diarrhea characterized by about 10 loose black stools daily. The next day he became undressed and sought medical attention.

Past history revealed that the patient had had scarlet fever in 1924, dengue in 1942, malaria in 1943, 1946, and pneumonia in 1949. He admitted to drinking a good deal—at least four highballs daily—and friends stated that he subsisted largely on alcohol. During the 10 months preceding his present admission to the hospital all of the hair of his head, trunk, and limbs had gradually turned gray and then fallen out.

Physical examination revealed a well-developed, well-nourished man who appeared 20 years older than his stated age. The most striking finding was the total absence of all hair. Skin and sclerae were moderately icteric. Many telangiectases were noted on the head; mild palm-erythema was present and there was a large spider angioma on the right wrist. The sides of the tongue were smooth and red. The liver was palpable 6 cm below the right costal margin and was tender. Cutaneous veins were prominent over the upper abdomen and the lower thorax. The testes were normal in size but distinctly soft. There was

F. M. U. S. Army Hospital APO 180 New York, N. Y. Major William J. Warren, M.D.
33d Field Hospital APO 11 New York, N. Y.

bilateral 2 plus pitting edema of the ankles. Deep reflexes were all hyperactive and there was marked intention tremor of the hands.

Complete blood cell counts, urinalysis, serologic tests for syphilis, examination of stool specimens, roentgenogram of the chest, and an electrocardiogram revealed normal findings. The cephalin cholesterol flocculation was 4 plus, thymol turbidity 173 units, serum bilirubin 6.1 mg per 100 ml, serum albumin 1.73, and serum globulin 4.78 grams per 100 ml. Prothrombin time was 32 percent of normal.

On admission a clinical diagnosis of cirrhosis of the liver was made and the patient was placed on the usual therapeutic regimen for that disease. In spite of intensive treatment, however, his condition deteriorated rapidly and he developed progressive hepatic insufficiency and decompensation. He died in hepatic coma on 5 November 1953.

Necropsy findings. Necropsy disclosed the liver to be involved by far advanced Laennec's cirrhosis displaying the classical hobnail morphology. Other findings were esophageal varices, neuter esophagitis, multiple gastric ulcerations, splenomegaly, ascites, and total alopecia.

DISCUSSION

The appearance of alopecia universalis in the terminal stages of Laennec's cirrhosis¹ makes a causal relationship between the two seem possible and even probable, particularly in view of the known propensity of cirrhosis to produce diminution of body hair. It is of interest that alopecia was ostensibly the presenting symptom of cirrhosis in this patient.

The mechanism by which cirrhosis could give rise to universal alopecia is not entirely clear. The estrogen retention which frequently complicates cirrhosis is thought to be the cause of the hair loss that is occasionally seen, through the agency of pituitary mediated suppression of testicular function.² In males without liver damage, however, massive doses of estrogens do not produce total alopecia, and neither does postpubertal castration lead to universal (or even pronounced) loss of hair.³ Moreover, the alopecia seen in hypogonadism usually does not involve the scalp.⁴ Some factor in addition to estrogen retention and gonadal suppression must therefore have contributed to the cause of the universal alopecia seen in this patient. Lack of certain members of the B complex of vitamins can cause abnormalities of the skin and hair, and the vitamin B deficiency which was undoubtedly present in this patient may have predisposed to a total alopecia. In addition, one or several of the toxic metabolites that accumulate in the body as a result of severe hepatic insufficiency may be detrimental to the hair cycle. Other occasional causes of symptomatic alopecia are hypopituitarism, myxedema, advanced malnutrition, and so on, present in this patient.

SUMMARY AND CONCLUSIONS

A case of classical Laennec's cirrhosis accompanied by alopecia universalis was presented. The cause of the loss of hair was thought to be estrogen retention with attendant gonadal suppression in combination with other unknown factors—possibly vitamin B deficiency or endogenous intoxication. Cirrhosis should probably be added to the list of possible causes of symptomatic alopecia universalis.

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MANAGEMENT OF RH-NEGATIVE PATIENT

Until some proved methods found of preventing development of congenital hemolytic disease during the pregnancy period it is evident that during this period Rh negative mother should have continuous observation and reported a surmise. As a rule the y c n be allow d to go into spontaneous abortion at term. A Combustion test should be taken from the blood of all infants born of Rh negative mothers who show immunization. Immediate replacement transfusion offers high salvage rate for those infants who show a positive Combustion test except in case of hydrops. The initial hyt a and f aroused in the minds of obstetricians and Rh negative obstetric patient during the past decade should be ill y d

—E L R SCHRAM M D

*Am n J m l /Ob t t and
Gy l gy* pp 251 252 F b 1954

Extensive Rectal Carcinoma With Pelvic Evisceration and Uretero Ileostomy

JAMES M STOKES *Captain, MC USA*
PHILIP A BERGMAN *Lieutenant Colonel MC USA*

MANAGEMENT of extensive carcinoma of the rectum, including resection of adjacent viscera, is a problem which has confronted surgeons with increasing frequency since the development of adequate supportive therapy and current surgical technique in the surgery of cancer. This case report of an extensive carcinoma of the rectum in a young man is of interest from the standpoint of the unusual size of the tumor and as an example of a method in management of the urinary tract following cystectomy as a part of pelvic evisceration.

CASE REPORT

A 26-year old man was admitted to an Army hospital in Europe in December 1954 and transferred to this hospital on 28 December. He had noted abdominal discomfort, increasing frequency of bowel movements, and weight loss over a period of 9 months.

The patient appeared to be acutely ill. Physical examination revealed moderate abdominal distention and evidence of marked weight loss. A large circumferential exophytic carcinoma of the rectum was present about 5 cm from the anus. The tumor overlay the left lobe of the prostate and almost completely obstructed the bowel lumen. A biopsy of the lesion confirmed the diagnosis of cancer. On 30 December a proximal transverse colostomy was performed for relief of obstruction. Following this, the patient improved considerably with supportive therapy including whole blood transfusions; nevertheless, he continued to have marked discomfort because of pain and tenesmus from the large pelvic mass and because of discharge of necrotic tumor tissue through the rectum. Intravenous pyelograms revealed a normal functioning urinary system. On cystoscopic examination the left half of the trigonal area was found to be markedly elevated and distorted. No definite gross invasion of the bladder mucosa was observed. The patient had difficulty in voluntary urination necessitating continuous Foley catheter drainage. There was no clinical or laboratory evidence of distant metastases.

On 14 January 1955 an exploratory laparotomy was performed. The liver and peritoneal cavity were free of apparent metastases. The tumor

F m A my d Navy H p tal H t Spr g Ark Capt St k s i w s gned to
U S A my H p tal Fort Ho d Tex

completely filled the pelvis elevating the bladder and other viscera out of the true pelvis. The regional nodes and the periaortic node were markedly enlarged above the level of the inferior mesenteric artery. Because of the size of the carcinoma and its fixation to the prostate and base of the bladder it was believed that any attempt at local excision would be futile as a definitive procedure for curing the patient. A modified pelvic evisceration was carried out in the manner reported by Bricker and Modlin removing the rectum sigmoid bladder prostate and regional nodes as an abdominopelvic procedure. Node resection was carried as high as the level of the duodenum. The internal (hypogastric) and external iliac nodes were resected with the specimen, exposing the internal iliac vessels without resecting them.² The hypogastric arteries were ligated in continuity and the middle hemorrhoidal vessels were divided at the origin. Perineal resection although difficult was carried as far as possible.

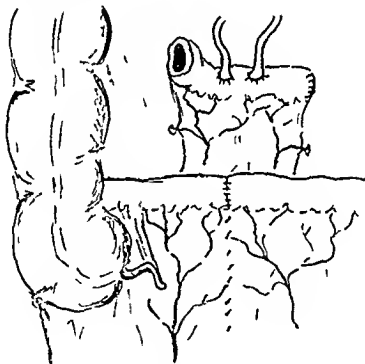


Fig. 1. Etero-ter t my f ile m show g th t o-l tomy t th isolated segment f ile m.

The ureters were divided about 1 inch beyond the common iliac artery. Care was taken to preserve the blood supply of the distal portion of the ureter. The ureters were then anastomosed with interrupted 0000 chromic gut on an automatic needle to the isolated segment of ileum.

About 5 inches from the ileocecal junction in the technic described by Cordonner suturing, in cross of ileum to ureter. A few sutures were

placed between the adventitia of the ureter and the setosa of the ileum. Because of the absence of dilatation of the ureter, few sutures were required to obtain a satisfactory anastomosis. The mobility of the isolated ileal segment was advantageous in preventing tension on the anastomosis. The distal end of the ileal segment was used as an ileostomy for the urinary outlet. The relationship of the isolated segment and uretero-ileostomy is represented in figure 1. Sigmoid colostomy was performed on the left side. The patient had an uneventful postoperative course with the exception of an episode of homologous serum jaundice occurring about 8 weeks after operation. A mild episode of pyelitis was controlled with antibiotics. Postoperatively the patient gained 25 pounds and managed his ileostomy without difficulty. Intravenous pyelograms were normal at the time of his discharge from the hospital.

COMMENT

The unfixed specimen revealed the longitudinal extent of the tumor to be 15 cm. with the distal margin 4.5 cm. from the anorectal junction. The tumor measured 15 by 10 by 13 cm. Figure 2 reveals the extent of the carcinoma grossly in the fixed specimen.



Figure 2. Posterior view of operative specimen (fixed)

Cross sections indicate the proximity to prostate seminal vesicles and bladder (fig 3) The danger of attempting to dissect the tumor from these organs without inclusion of adjacent viscera was apparent from microscopic examination of a section through the adherent areas Sections of 97 grossly enlarged lymph nodes did not show metastases The carcinoma was moderately differentiated and there was evidence of marked inflammatory change throughout all layers of the rectum and pelvic tissue The inflammation undoubtedly explained the patient's marked tenesmus and pain



Fig 3 Cross section of specimen showing carcinoma of the upper part and bladder below

The occurrence of a carcinoma of this size with fixation anteriorly presented a problem of management of the ureters following exenteration of the pelvic viscera An isolated segment of ileum functioning as an ileostomy as developed by Bricker was used in this patient this method offers the advantage of separation of the urinary and fecal contents (fig 4) A follow up of his series reported through 3 years has shown no evidence of hyperchloromic acidosis From the standpoint of the patient avoidance of a wet colostomy also seems highly desirable The use of an isolated segment of sigmoid colon in a similar manner has been reported In suitable cases this method obviates the

entero-enterostomy because the distal colon is brought out as a colostomy



Figure 4 Detail of positions of ileostomy (on the right) and colostomy (on the left)

SUMMARY

The occurrence of an unusually large carcinoma of the rectum in a young man is reported. Fixation of the carcinoma to the adjacent base of the bladder and prostate necessitated pelvic evisceration. The method of management of the urinary stream using an isolated ileal segment as described by Bricker, provided satisfactory results in this patient.

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Amyoplasia Congenita

Report of a Case

LAWRENCE H GOLDEN *CPT* USAF (MC)

GEORGE D WEICKHARDT *MAJ* USAF (MC)

AMYOPLASIA CONGENITA is a rare multiple developmental articular rigidity which produces fixation of joints similar to that seen in fibrous ankylosis but in which there is no clinical or laboratory evidence to suggest an inflammatory process. The term multiple congenital articular rigidity, used by Sheldon, describes the clinical picture of the disease but gives no clue as to the cause.

According to Brandt, other anatomic abnormalities which may occur in these patients are: subluxation of hips, elbows, knees and thumbs; shortened neck; torticollis; kyphosis; scoliosis; digit webbing; polydactylia; hernia; genital deformities; and hydrocephalus.

In a recent article by Lemmon and Vail, this unusual clinical entity was fully described. Their review of available literature indicated the infrequency of case reports. We are presenting an additional case to illustrate a form of the disease which may suggest progressive features in respect to the muscular changes present.

CASE REPORT

A 24 year-old officer was admitted to this hospital on 19 March 1955. He thought that he was developing muscular dystrophy and was referred to us for this reason. The patient stated that he had had curvature of the fingers of both hands since childhood. He was certain that this curvature was present when he was 11 years old. In November 1952, when the patient developed an upper respiratory infection, a physician expressed some interest in the deformity. A year later when the patient entered military service, the condition was recorded and was believed to be without clinical significance. Muscular atrophy in the interosseous spaces had evidently been present for many years. In October 1954, the patient believed that the muscles of the right thumb were becoming atrophied. At no time did he experience any pain or other sensory disturbance.

F m U S A r F o r H p t a l S a m p A u F B N Y

A history of familial diseases of the nervous or musculoskeletal systems was not elicited

Physical examination was negative except for the inflexibility of the hands (fig 1) All fingers were partially flexed at the interphalangeal joints and could not be fully extended with the exception of each thumb There was some limitation of motion involving the abduction of the fingers The latter seemed related to muscular weakness Another finding of note was the atrophy of the interosseous and thenar muscles on both hands—more marked on the right than on the left Neither fasciculations nor sensory abnormalities were detected

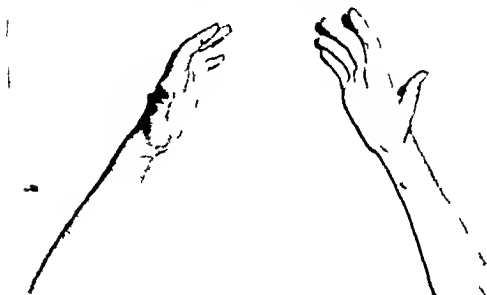


Figure 1 Photograph of hands showing muscular atrophy and fingers fully extended.

Blood serologic tests for syphilis were negative Spinal fluid pressure was 130 mm of water The Queckenstedt test gave normal results Examination of the spinal fluid showed 2 lymphocytes per cu. mm and the total protein was 25 mg per 100 ml Serologic tests of the spinal fluid for syphilis were negative and the gold curve was normal The routine blood count and urinalysis showed no significant abnormality The blood sugar and nonprotein nitrogen levels were normal The blood calcium was 10 mg per 100 ml phosphorus 4.67 m_0 per 100 ml and alkaline phosphatase 3.1 units per 100 ml (Bodansky) Roentgenograms of the hands showed minimal osteoporosis without ankylosis (fig 2) and roentgenograms of the skull, chest, and entire spine showed no significant abnormalities

According to the literature, the cause of this disturbance is not clear Sheldon¹ suggested a primary aplasia or hypoplasia of certain muscle groups as the initial lesion while Brandt² thought that it was a neurologic disease related to the group of progressive muscular atrophies

Extensive pathologic study has been wanting because of the rarity of the disease. Brandt reported on a biopsy of the quadriceps muscle which showed increased interfascicular connective tissue and atrophy of muscle cells together with degenerative changes in the anterior horn cells of the spinal cord.

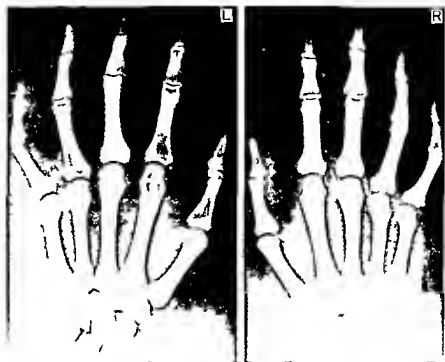


Fig. 1. Roentgenograms of the hands.

SUMMARY

A patient with amyoplasia congenita, a rare multiple developmental articular rigidity, is reported. The clinical picture was characterized by curvature of the fingers of both hands existing since early childhood, muscular atrophy of the interosseous spaces, the absence of sensory disturbances, and a negative familial history. Because of the localization to the hands and absence of other lesions, it was thought to be benign, although rather recent changes in the musculature about the involved joints raised the question of progression.

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Scleroma in the United States

Report of a Case in a Native

BYRON G. McKIBBEN *Colonel MC USA*

MILWARD W. BAYLISS *Colonel MC USA*

SCLEROMA was first described in 1870 as a hard, painless, proliferating, tumorlike disease of the nose, extending to the skin of the lip and into the nasopharynx. Because of the hard consistency and original location in the nose, Hebra and Kaposi gave it the name rhinoscleroma.¹

It later became evident that the scleromatous process may occur anywhere in the respiratory tract, from the nose to the bronchi and that in many cases the nose is not involved at all.² At the Second International Congress of Otolaryngology in Madrid, in 1932 the more inclusive term scleroma was therefore unanimously adopted.³ Kouwenaar⁴ has suggested the term respiratory scleroma.

Scleroma is a world wide disease with its principal focus in eastern Europe. Although increasing in the countries of the Western Hemisphere, especially in those of Central and South America, it is still rare in the United States.⁴

In 1893 Jackson⁵ reported a case of rhinoscleroma in an immigrant from Hungary. While the diagnosis was not confirmed by histologic examination this report was the first scientific paper on scleroma to be published in the United States.

In 1896 Wende⁶ reported a case of rhinoscleroma in a boy whose birthplace was Buffalo, N. Y. Histologic examination was suggestive of scleroma but it was difficult to demonstrate the presence of the Frisch bacilli in the cells. An organism not unlike the bacillus of Friedlander was isolated on culture.⁶ While this diagnosis was not definitely confirmed by laboratory methods, this represents the first case of scleroma in a native of the United States recorded in medical literature.

The first case of scleroma definitely confirmed by histologic examination and culture was reported by Freeman in 1900.⁷ The patient was an immigrant from Russia.

In 1921 Watlins presented a case of scleroma in a native of Maryland. This patient had visited the West Indies and Central

F. M. L. T. man Army Hospital San Francisco Calif. Col. McKibben is now assigned to Army Hospital APO 500 San Francisco Calif.

American countries where he went as a fireman on a ship. This was the first case in a native of the United States in which the diagnosis was unquestionably confirmed by histologic examination. The tissue for this examination was removed from the larynx at autopsy. Unfortunately culture was not done in this case.

In 1940 Cunnig and Guerry made a careful review of the literature and listed 103 cases of scleroma in the United States and Canada (the exact number in each of these two countries was not stated). Seventeen of the patients were native born; an observation confirmed by Cunnig. Represented in this series of 103 cases are a number of cases apparently not elsewhere recorded that were compiled from answers to questionnaires sent to otolaryngologists in the United States. One of these patients treated by Tarroll in 1890 was a native of New York. We are unable to determine if the diagnosis was confirmed by biopsy and culture.

As previously noted the diagnosis was not definitely established in some of the cases listed by Cunnig and Guerry. In two of these where biopsy specimens had been obtained there was controversy as to whether the pathologic diagnosis was scleroma or sarcoma.

We made a careful review of the literature from 1941 to the end of 1954 and found an additional 19 cases among immigrants, 92 among natives, and 1 in which the records of the patient's nativity, age, and sex had been lost. Included in this group are Wexler's 3 cases; additional details of which are listed in table 1.

TABLE 1
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t ph b t so 27 p t t w th

Case	Patient	Age	Biopsy
1	M. n. man	22	Cal f m
2	M. ica w m	28	Cal f i
3	M. ma	19	C l rad
4	Han	55	low
5	W m	44	G rna y
6	M. ca ma	27	M
7	D t il k w — d m l d		—

This makes a total of 145 patients by the end of 1954. Thirty-nine of these were native born. Our patient, a native of Arizona, brings the total to 146 at the time of this writing (table 2).

This of course does not represent all of the cases that have occurred in the United States. Godwin observed about 10 cases

at the Harbor General Hospital in Torrance, Calif With the exception of one—a Ute Indian woman who had lived in New Mexico—these patients were members of two Mexican families They ranged in age from 7 to 60 years, and the adult members were born in Mexico

TABLE 2 *Patients with scleroma in the United States*

Date reported	Author	Foreign born	Native born	Birthplace unknown
1941	Goldstein ³¹	1		
1942	Cunning and Guerry ⁴	86	17	
1942	Dixon ³²	1		
1943	Kellert ³³	1		
1943	Dill ³⁴	1		
1947	Cunning ³⁵		1	
1947	Hara and associates ²¹		7	
1948	Muller C K ³⁶		1	
1948	Putney ³⁷	1		
1948	New and associates ¹¹	1		
1949	Wexler ¹²	2	4	1
1949	Kline and Brody ³⁸		1	
1949	Som and Jaffin ³⁴	1		
1949	Muller, A II ³⁹	1	2	
1950	Olson ⁴⁰	2	1	
1950	Morwitz and Horwitz ³⁵	1		
1951	Eisenstadt ¹	1		
1952	Titch ²		1	
1952	Russell and associates ²⁷		1	
1953	Hoover and King ²	1		
1953	Holinger and associates ⁴³	3		
1953	Dwyer ³⁴		1	
1954	Hollender and Scheer ⁴		2	
1954	Folbre and associates ³⁸	1		
1955	M Kibben and E yless		1	
	Total	105	40	1

Cas pr t d h r

A definite diagnosis of scleroma is best made by examination of a biopsy specimen Histologically the lesion is a granulomatous type of chronic inflammation associated with fibrosis The cellular infiltrate is composed mainly of plasma cells and lymphocytes Scattered throughout this infiltrate are three characteristic types of cells The first type is the Russell body, which is a rounded homogeneous, eosinophilic cell sometimes containing an eccentric pyknotic nucleus These bodies apparently represent degenerated plasma cells, are nonspecific, and occur in various inflammatory lesions The second variety is the Mikulicz cell, which is large (39 to 50 μ in diameter) with an abundant foamy pale cytoplasm and a relatively small nucleus The Mikulicz cells are characteristic of scleroma and are usually present in

the greatest numbers near the surface of the lesion either singly or in clusters. The third characteristic is the Frisch bacillus. This bacterium *Klebsiella rhinoscleromatis* is found in large numbers within the cytoplasm of the Mikulicz cells as well as in interstitial spaces. The foamy appearance of the Mikulicz cells is probably due to the abundant capsular material of this bacterium. The presence of Russell bodies, Mikulicz cells and Frisch bacilli establishes the diagnosis of scleroma.

Isolation of *K. rhinoscleromatis* from secretions from the nose and throat or from biopsied tissue is an aid in confirming the diagnosis of scleroma. These gram negative encapsulated rod bacteria are easily cultured on eosin-methylene blue agar, blood agar or plain agar. On these media are produced large translucent mucoid coalescing colonies.

Kauffmann has demonstrated that the *Klebsiella* bacteria isolated from patients with rhinoscleroma are antigenically and biochemically homogenous and has characterized the species on the basis of their inability to split dulcitol, urea and the organic derivatives d-tartrate, citrate and mucate as well as a negative Voges-Proskauer reaction. Final identification of the species *K. rhinoscleromatis* is based on the presence of seratic amorphous O antigen 2 and capsular K antigen 3.

Although the role of *K. rhinoscleromatis* as the causative agent of scleroma has been doubted by numerous authors, the constant presence of this organism in scleromatous tissue and its frequent presence in the nasal secretions of persons with scleroma and of their contacts along with its relative absence otherwise lead one to believe that it is a causative factor. Although the third postulate of Koch, the production of the disease by inoculation of the *Klebsiella* bacteria, has not been accomplished, there is otherwise little doubt that this organism is the causative agent of the disease. Recent evidence that the disease responds favorably to antibiotics to which *K. rhinoscleromatis* is sensitive^{3, 4} further substantiates the evidence that this organism is the causative agent or at least a factor in the prolongation of the disease.

Schindler⁵ treated five patients with rhinoscleroma in his private practice. Two of these were natives of the United States and the other three were foreign born, one from Pakistan, one from San Salvador and one from Nicaragua. *K. rhinoscleromatis* was identified by culture in all five cases. A biopsy specimen was obtained from one patient and it showed the characteristic histologic changes of scleroma. All of Schindler's cases responded favorably to treatment with terramycin (brand of oxytetracycline). While Wexler's series is small, the finding of seven cases of scleroma among 27 patients with atrophic rhinitis sug-

gests that a substantial proportion of all patients in whom a diagnosis of atrophic rhinitis has been made may actually be suffering from early scleroma

CASE REPORT

A 21 year old Mexican with a 4 year history of nasal obstruction hoarseness and dyspnea was drafted into the Army on 4 March 1953. He was a native of Arizona and had not left the state until he entered the military service

On 7 May 1953 he was admitted to a U S Army hospital. A diagnosis of papillomatouslike lesion of the larynx was made and he was transferred to this hospital

The history disclosed that for many years he had been bothered with a thick yellow nasal discharge and postnasal drainage. Dyspnea on exertion had been increasing and the only relief from this was to decrease his activity. He believed that the shortness of breath was due to some obstruction in his throat interfering with the air getting down into his lungs. Hoarseness which had been present for a period of 4 years had become worse during the last year. He was awakened every night by the presence of thick tenacious mucus in the throat. Coughing to remove the mucus which at times was bloody caused some shortness of breath.

One of his sisters had similar symptoms. Five sisters four brothers and his parents were in good health.

On examination both nasal passages were found to be partially obstructed by crusts and yellow purulent exudate beneath which were granulomatous masses that bled easily. A similar condition was present in the nasopharynx. On indirect laryngoscopic examination nodular masses were seen on the epiglottis both ventricular bands both vocal cords and in the subglottic region. The glottic aperture was markedly decreased and there was an inspiratory wheeze. The remainder of the physical examination was within normal limits.

Roentgenographic examination demonstrated soft tissue masses in the larynx and superior portion of the trachea with marked narrowing of the airway at the level of the cricoid cartilage (fig. 1).

Biopsy specimens were removed from the left nasal fossa on 14 May 1953 and from the left arytenoid area on 18 May 1953. Both specimens revealed similar pathologic pictures. The biopsied tissue consisted of irregular gray white fragments. Microscopic sections were covered with stratified squamous epithelium beneath which was a stroma composed of loose connective tissue containing numerous small blood vessels and densely infiltrated with inflammatory cells. These were chiefly plasmacytes with lesser numbers of lymphocytes and occasional eosinophils neutrophils and macrophages. Distributed throughout the stroma were large oval to round Mikulicz cells usually with a

small nucleus and numerous closely packed cytoplasmic vacuoles giving the cytoplasm a foamy appearance (fig 2) Many of these cells



Fig 1 Roentgenogram showing the nasal cavity and the level of the nasal bone. The level of the nasal bone is indicated by a line between C6 and C7. The nasal bone is just above the level of the nasal bone.

especially around the periphery contained the encapsulated bacilli known as coccidia (fig 3) These organisms were also noted in macrophages. Scattered throughout the inflammatory tissues were large deeply eosinophilic round cells (Russell bodies) which appeared to be undergoing hyalinization (fig 4) Many narrow bands of collagenous connective tissue were spread throughout the lesion. The diagnosis was scleroma of the nose and larynx.

Culture of purulent nasal secretions on blood agar plates revealed small numbers of *Corynebacterium* *case* and nonhemolytic streptococci. However the predominant organism on this medium consisted of a gram negative encapsulated rod and practically pure cultures were obtained on eosinmethylene blue. Agglutination reactions identified the organisms as *Klebsiella* type 3 (*Klebsiella* coccidia). Culture from scleromatous tissue from the same patient consisted entirely of this same *Klebsiella* organism. Antibiotic sensitivity tests performed

by the disk method on blood agar plates gave the results listed in table 3

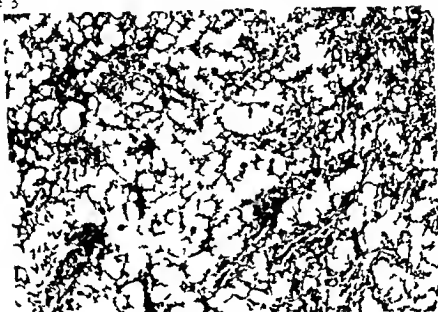


Figure 2 Mikulicz cells are the large pale cells with small nuclei and foamy cytoplasm. Scattered irregularly among these are bands of fibrous tissue in which are small numbers of lymphocytes and plasma cells. Several prominent dark staining Russell bodies are also visible. (Hematoxylin and eosin stain $\times 300$)



Figure 3 Fitch bacilli (*Klebsiella noscleromatosa*) stained with Warthin-Starry silver impregnation are numerous in the lower half of the Mikulicz cell. Note the capsule surrounding dark staining organisms ($\times 4500$)

Initially 250 mg of terramycin 4 times daily was prescribed. Six days later when the organism was identified and sensitivity tests completed the medication was changed to aureomycin in the same dosage.

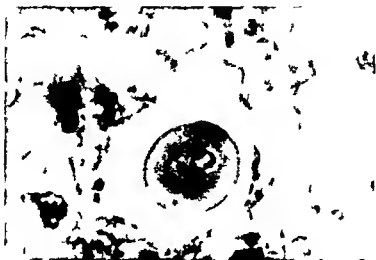


Fig. 4. *T. rubens* body, the dark peripheral acidophilic mass, the granular mass, the spore, the red plasma (H&E, xyl and e, t, x4500).

TABLE 3. Sensitivity of *K. h. osl.* to various antibiotics (d.k.m. in d).

Antibiotic	Concentrations		
	1	2	3
Terramycin	10 mg -	30 mg -	60 mg +
Chl. ramph. ol.	10 mg +	30 mcg +	60 mg +
Polymyxin	5 mg +	10 mg +	30 mg +
Aureomycin	10 mg +	30 mcg +	60 mg +
Dihydrostreptomycin	1 mg -	10 mg +	100 mg +
Bacitracin	2 units -	10 units -	20 units -

Within 3 weeks from the time treatment was started the wheezing had stopped, his anorexia was less noticeable, and the lesions in the nose and larynx showed marked improvement. The patient was discharged from the Army on 19 June 1953 and was given enough aureomycin for one more week's treatment. The total time of treatment was one month.

The patient's reply to a follow-up letter 19 months later revealed that he was feeling well when he left the service. He further stated that he had not consulted a private physician.

COMMENT

It is interesting to note that this patient responded rapidly to treatment with aureomycin. Botros and associates¹⁷ treated 14 patients with terramycin, aureomycin, or streptomycin and commented that aureomycin appears more rapid in action on laryngoscleroma than other antibiotics.¹⁷ However, only one of their 14 patients was treated with aureomycin.

SUMMARY

A review of the literature on scleroma shows an increasing number of cases being diagnosed in the Western Hemisphere.

Originally considered to be a disease of the nose, the most recent opinions hold scleroma to be a disease which may involve any part of the respiratory tract. Diagnosis is best made by examination of a biopsy specimen, which will reveal three characteristic types of cells: the Russell body, the Mikulicz cell, and the bacterium *A. rhinoscleromatis* (Frisch bacillus).

Diagnosis of a case of scleroma in a native of Arizona was confirmed by histologic examination, which revealed the typical cells. The patient responded favorably to treatment with aureomycin; his symptoms were relieved, and the lesions in the respiratory tract regressed.

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Hemorrhoids and Anal Fistula in Infants and Children

ALVIN O UHLE M D

DONALD CAMPBELL, *Lieutenant Colonel MC USA*

ANORECTAL diseases, excluding congenital anomalies, are uncommon in infants and children. Although rectal prolapsa, polyps, anal fissure, and proctitis are occasionally encountered, hemorrhoids and anal fistula are extremely rare in patients under the age of 12 years.

That hemorrhoids occur in infants or young children has been a subject of debate for many years. As early as 1866 Gosselin¹ remarked "I have found in some works indications of hemorrhoids in children but the details are too meager to assure oneself that something else was not the matter; e g, rectal polypus. We must not forget, in fact, that up to our own day, man has admitted the existence of hemorrhoids without making local examination, and simply because there was present either bleeding from the anus, or pain during defecation. I will believe in hemorrhoids in children when I shall have seen them, or when a serious observer, after a careful examination, shall have affirmed that he has seen them."¹ In 1873, when Bouchut² was asked if hemorrhoids occurred in young children, he answered "No. Children do not have hemorrhoids any more than they have varicose veins. For the past 20 years children have been brought to me who were said to have hemorrhoids, because of bleeding after defecation, or because of a small anal tumor. All of these cases were errors in diagnosis."

Up to 12 or 13 years of age I know of no authentic observation of hemorrhoids, and I believe that cases of this nature are all to be referred to rectal polypus."²

While the above statements are obviously not acceptable today, they are, nevertheless, of historical interest and indicative of the rarity of this condition. Modern texts on pediatrics and proctology teach that hemorrhoids are seldom found in infants and children. Bacon³ stated that "the condition in infancy would constitute a medical anomaly" yet he referred to 3,700 cases of hemorrhoids tabulated by Smith⁴ of which 26 were found in children under the age of 9 years. There is little in the recent American literature on this subject. Schapiro,⁵ in evaluating 2,700 pediatric proctologic conditions found 25 cases of hemorrhoids, 5 of which occurred in

From U. S. Army Hospital, Fort Riley, Kan. Dr. Uhle is now at 3880 N. E. Alamogordo, Portland, Oreg.

newborn infants 11 in infants and 9 in children. He believed that the occurrence of internal hemorrhoids in children might still be seriously questioned because in early life the middle and inferior hemorrhoidal veins have competent valves.

Fistula in ano perhaps not as unusual as hemorrhoids is also rare in children. Holt and Howland stated that ischiorectal abscess is not a rare condition even in infancy but that fistula as a sequela of incision and drainage is most infrequent. Bacon reported a series of 100 fistulas and abscesses of which only 39 occurred in infants. In a series of 1 801 anal fistulas Buia found only 9 in infants. In Schapiro's report there were only 20 fistulas. Venturo reported 300 abscesses and fistulas which included only 7 fistulas in infants. These figures would indicate that about 1 percent of all fistulas occur in infants and that fistulas constitute about 1 percent of all pediatric proctologic diseases.

In the past year at this hospital we have had the opportunity of treating a 4 year old child with bleeding hemorrhoids and a 4 1/2 month old infant with a fistula in ano. The rarity of these two conditions in infancy and childhood has prompted us to submit these case reports.

CASE REPORTS

Case 1. A 4 year old white child was admitted to the hospital in June 1954 because of profuse rectal bleeding following passage of a hard stool. Past history revealed that he had had trouble with constipation since birth and had passed small amounts of bright red blood intermittently with stools since she was 12 days old. When she had been an infant her mother had noted a gradually increasing protrusion at the anus and when the child was 19 months old incomplete evacuation of an external thrombotic hemorrhoid had been performed. Attempts to regulate her bowel habits with mineral oil met with only partial success and constipation with intermittent bleeding persisted. In recent months the mother again noted enlarging irregular protrusions at the anus. On the morning of admission after passing a constipated stool the child had a severe rectal hemorrhage.

Examination revealed a pale 4 year old girl who appeared to be normally developed. The liver and spleen were not palpable and there was no evidence of portal hypertension. Visual examination of the anus revealed a fissure of large hemorrhoidal masses protruding from the anus (fig. 1). No other abnormalities were found. In all laboratory studies were as follows: Red blood cell count 3 150 000 per cu. mm hemoglobin 6.1 gram per 100 ml morphologic cell findings normal white blood cell count 5 350 per cu. mm bleeding time 2 minutes coagulation time 4 minutes platelet count 158 000 cephalin cholesterol flocculation (24 and 48 hour) negative serum bilirubin 0.70 mg per 100 ml.

Findings of a urinalysis and of a roentgenogram of the chest were normal.

A blood transfusion of 300 ml was given and the patient carefully observed. No further hemorrhage occurred but a small amount of blood mixed with each stool continued to appear. Iron preparations were administered orally and the hemoglobin gradually rose to 10.6 grams while the red blood cell count increased to 5,140,000 per cu. mm. An esophagram and upper gastrointestinal and barium enema studies were normal.



Figure 1 (case 1) Photograph of large prolapsing hemorrhoids in a 4-year-old child

Proctosigmoidoscopic examination was performed under general anesthesia; no abnormalities other than the large internal external hemorrhoids were noted. Because bleeding had practically ceased in this young patient, operation was withheld and she was discharged from the hospital on the 10th day following admission. Feosol (brand of ferrous sulfate) and petrogalar (brand of aqueous suspension of 65 percent mineral oil) were prescribed.

Four weeks later, rectal bleeding again increased in spite of improved bowel habits. Laboratory determination revealed that the hemoglobin had fallen to 9.5 grams per 100 ml and the red blood cell count to 3,840,000 per cu. mm. Examination revealed no essential changes. Hemorrhoidectomy was advised. On 16 August 1954, hemorrhoidectomy was performed. Four large combined hemorrhoidal masses were excised. The microscopic pathologic report confirmed the fact that these were hemorrhoids. The postoperative course was satisfactory with only mild bleeding at stool during the first few days. The patient was improving steadily at the time of her discharge on the 11th postoperative day.

Discussion The cause of hemorrhoids is not definitely established. The most acceptable theories are that they arise secondary to anal infection and constipation portal hypertension constitutional diseases severe diarrhea and straining. Of these straining due to constipation is undoubtedly the most common cause of hemorrhoids in children. It is certainly the most plausible explanation for the hemorrhoids in this patient who had been affected with constipation since infancy and at 19 months of age had developed an acute thrombotic external hemorrhoid. A thorough investigation had revealed no other cause for hemorrhoids.

Ordinarily small hemorrhoids in young infants and children may be treated conservatively. If the cause of the straining—such as constipation crying coughing and diarrhea—can be alleviated the hemorrhoids will usually subside. In our case the constipation responded poorly to treatment and bleeding became severe. Hemorrhoidectomy was considered necessary. The patient has now been followed for almost 1 year and there has been no further bleeding. Examination reveals no evidence of recurrent or residual hemorrhoids and the anorectal canal appears normal. The hemoglobin and red blood cell count remain normal. The result was gratifying.

Case 2 A 4 7-month-old white boy was hospitalized in November 1954 for correction of a chronically draining perianal opening. Past history revealed a normal full term delivery and average neonatal development. Dietary and bowel habits were not unusual. There was no history of rectal trauma or exposure to tuberculous. When the child was 3 months old a small tender swelling about 3 cm from the anus in the right perirectal quadrant was noted by the mother. This was diagnosed as a furuncle and incised. Drainage continued for 3 weeks following which the baby was referred to the surgical service.

Examination revealed small granulating sinus at the site of incision with a palpable subcutaneous tract. This was probed and led directly to the anorectal line. No internal opening was palpated or visualized through the anoscope. A diagnosis of fistula in ano was made and the patient was admitted to the hospital for an operation. On 29 November under general anesthesia a pinpoint internal opening was found in a crypt directly opposite to the external orifice (fig. 2). No other anorectal abnormalities were noted. Fistulotomy was done including division of the external anal sphincter muscle. The patient was discharged on the first postoperative day and daily cleansing and dilatation were performed in the outpatient clinic. Healing was complete within 3 weeks. Follow-up visits to date have revealed no evidence of recurrence or incontinence.

Discussion Fistulas are thought to arise in anal crypts infected as a result of constipation diarrhea or other rectal trauma. There is apparently no age predisposition in infancy except that



Figure 2 (case 2) Photograph demonstrating complete anal fistula in a 4 1/2-month-old infant

these lesions occur more frequently after the fourth month of life. According to Gabriel, fistulas in infants under 1 year of age rarely occur in females. Venturo pointed out that fistulas in adults are generally posterior, whereas in infants they are more frequently lateral. This difference, he believes, is due to the lack of anorectal angulation and to the prominence of the lateral crypts in infants. In addition, fistulas in infants are usually of the simple type, having only one internal and one external opening. Although often subcutaneous, they may pass deep to the external sphincter musculature. Bacon presented a photograph of such a complete fistula in a 5 week old infant. The treatment of fistula in ano in infants is simple fistulotomy, and complete healing usually follows promptly.

Except for the absence of antecedent constipation, diarrhea, or other rectal trauma, our case of anal fistula is typical of this condition in infants. The patient recovered completely following simple fistulotomy; he has now been followed for over 6 months and there is no evidence of incontinence or recurrence.

SUMMARY

Hemorrhoids and fistulas in ano in infants and children are rare. A case of severe bleeding hemorrhoids in a 4-year old child and one of an anal fistula in a 4 1/2 month old infant have been

presented. The literature has been partially reviewed and some special features of these conditions have been discussed.

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PRENATAL CARE

Prenatal care is helpful to ill women and it is essential for considerable number who must avoid disaster. It is obvious that pregnancy, labor and delivery are physiological processes and it is also obvious that all women are not normally physiologically. Therefore the objective of prenatal care is to detect and correct situations that are not physiologically normal. For example a woman with impaired kidney function may have no signs of the weakness until the strain of pregnancy brings out the defect. Tuberculosis may increase the danger of pregnancy especially during the period of lactation although there were no signs or symptoms prior to the pregnancy. Heart disease is a handicap in the non-pregnant woman and the defect is frequently brought out during the pregnancy and delivery. For normal pregnant women and in the conditions mentioned it is apparent that prenatal care is essential for all. It is most difficult to draw a line between health and disease and what is thought to be a normal physiological process often develops into a pathological state.

—FRANK E. WHITACRE, M.D.

J. Am. Med. Ass. 161 112 May 8 1954

ANNUAL MEETING OF MILITARY SURGEONS IN WASHINGTON, D C, NOVEMBER 7 9

The 62d annual convention of the Association of Military Surgeons of the United States will be held at the Statler Hotel, Washington, D C from 7 9 November 1955 In addition to the program listed below, panel meetings of the dental, sustaining membership, sanitary engineering, and veterinary sections will be held on Wednesday, 9 November

Monday Morning 7 November

- Presiding: Maj Gen Joseph I Martin MC USA President
- Association President's Address*—Maj Gen Joseph I Martin MC USA Special Assistant to The Surgeon General Department of the Army
- Welcoming Remarks*—Frank B Berry MD Assistant Secretary of Defense (Health and Medical)
- Ten Years of Atomic Medicine*—Shields Warren MD Adviser to the Atomic Energy Commission Professor of Medicine Harvard Medical School
- Military Hospitals*—Maj Gen Silas B Hays MC USA The Surgeon General Department of the Army
- Medical Personnel Problems in the Military Services*—Rat Adm Bartholomew W Hogan (MC) USN The Surgeon General Department of the Navy
- Dependence in the Military Services*—Maj Gen Don C Ogle USAF (MC) The Surgeon General Department of the Air Force
- Preventive Medicine in the Atomic Age*—Leonard A Seiple MD The Surgeon General U S Public Health Service
- Medical Aspects of Radiation Energy as Applied to the Hematopoietic System*—William S Middleton MD Chief Medical Director Veterans Administration
- The FCDA Medical Staff*—John M Whitney MD Medical Director USPHS Director Health Office Federal Civil Defense Administration
- Medical Supplies for Mass Casualties from a Pharmaceutical Perspective*—Raymond M Rice MD Executive Director Medical Research The Lilly Research Laboratories Eli Lilly and Company

Monday Afternoon

- Presiding: Brig Gen Harold H Twitchell USAF (MC) Surgeon Continental Air Command
- Theme: Medical Effect of Nuclear Warfare*
- Introduction to Problems*—Brig Gen James P Cooney MC USA Deputy Surgeon General Department of the Army
- Phenomena Associated with Nuclear Detonation*—Howard L Andrews Ph D Scientist Director USPHS Head General Radiobiological Section Radiation Branch National Cancer Institute

M b l nd S cond ry M l l jur —Comdr J h A O Do ghue (MC)
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Tuesday Morning 8 November

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Tuesday Afternoon

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Blood and Plasma Volume Expanders for Mass Casualties—Capt Lloyd R Newhouser (MC) USN Ret. Director John Elliott Blood Bank of Dade County Fla

Anesthesia and Sedation for Mass Casualties—Col Harvey C Slocum MC USA Chief Anesthesia and Operative Service Walter Reed Army Hospital

Summary—Maj Gen I S Rardin MC USA John Rhea Barton Professor of Surgery University of Pennsylvania School of Medicine

Discussion—Led by Rear Adm. Richard A Kern (MC) USNR Ret Professor and Head of Department of Medicine Temple University School of Medicine

Wednesday Morning 9 November

Presiding: Rear Adm Thomas F Cooper (MC) USN Assistant Chief for Planning and Logistic Bureau of Medicine and Surgery Department of the Navy

Theme *Organization for the Management of Mass Casualties*

Introduction to Problems—Rear Adm Thomas F Cooper (MC) USN

Public Health and Sanitation Problems in Nuclear Warfare—Robert Leslie Smith M D and Albert H Stephenson Sanitary Engineer Director USPHS Director Sanitation Division Health Office FCDA

Welfare Problems in Nuclear Warfare—Honorable Charles I Schottland Commissioner of Social Security Department of Health Education and Welfare

Role of Nurses—Cecilia H Hauge R N Director Nursing Service Department of Medicine and Surgery Veterans Administration

Role of Medical Service Corps Officers in the Management of Mass Casualties—Comdr Kenneth L Knight (MSC) USN Division of Preventive Medicine Bureau of Medicine and Surgery Department of the Navy

The Role of Distress Physical and Occupational Therapists in the Management of Mass Casualties—Col Harriet S Lee W MSC USA Chief Women's Medical Specialist Corps Office of The Surgeon General Department of the Army

Role of Elitist and Technical Assistants—Maj John C. Delahunt USAF (MSC) Directorate of Plans and Hospitalization Office of The Surgeon General Department of the Air Force

Role of the Veterinary Officer in the Management of Mass Casualties—Lt Col Leslie C Murphy VC USA Deputy Director Veterinary Division Army Medical Service Graduate School

The Role of the Dental Officer—Capt. John V. Niskanen (DC) USN Chief Prosthodontic Division U S Naval Dental School Bethesda Md

Role of Medical Officers—Col Karl H Houghton USAF (MC) Technical Assistant Human Factors Air Force Special Weapons Center Kirtland Air Force Base

Summary and Discussion—Brig Gen Harold W. Glatfley MC USA Surgeon First Army

Wednesday Afternoon

Presiding: Paul M. Ireland M D Director Surgical Service Department of Medicine and Surgery Veterans Administration

Theme *Organization for the Management of Mass Casualties*

Introduction to Problems—Paul M. Ireland M D

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 3 l t H p t a l C t

NOTICE DISTRIBUTION TO ARMY PERSONNEL

A monthly gratis copy of the U S ARMED FORCES MEDICAL JOURNAL is available for all Army medical department officers on active duty. Those not receiving a copy should inform their post publications officer who will requisition the Journal from appropriate AG Publications Depot in accordance with AR 310-90.

Copies of the Journal are not available to medical reserve officers of the Army not on active duty. They may obtain the Journal however on a loan basis from their medical reserve unit.

A MESSAGE FROM THE A M A

A survey of physicians being released from active military service has been conducted since 1 July 1952 by the Council on National Defense of the American Medical Association. The survey is primarily designed to obtain information on the utilization of physicians in uniform, the amount of time devoted to the care of military personnel, their dependents, and others, staffing conditions for physicians and allied health personnel, comments and suggestions as to methods to improve further the military medical corps as well as ways in which organized medicine can be of greater assistance to the military physicians.

The Council decided to revise the questionnaire after analyzing the replies contained in the thousands of returned forms. It was felt that some of the questions were phrased in a manner which could result in biased or "loaded" replies. A professional testing group was employed to assist with this project. The questionnaire was revised and its distribution began on 1 July 1955. In 1956 a summary report will be made on the results obtained under the revised form.

A brief summary, covering the results of the first two years of the survey, was published last year in the *Journal*. This report, which will be continued in the November issue, covers the period from 1 July to 31 December 1954. During that period 2,373 questionnaires were mailed by the Council. Out of this number, 1,500 answered forms were returned to the Council. This represents a 63 percent response.

Age distribution by service. Of 1,500 physicians replying, 783 men were between the age of 30-34 years, 465, between 25-29 years, 200, between 35-39 years, and 52 were over 40 years of age. The largest number of physicians, 639, were in the Navy, 512 and 348 were in the Army and Air Force, respectively. One physician was in the Coast Guard. The Army had the largest number in the 30-34 age group, and the 40 and over age group. Of those in the 25-29 age group, 225 were in the Navy and 134 were in the Army.

Date of graduation from medical school. A little over half of the physicians who replied, 764 or 50.9 percent, graduated from medical school between the years 1945-1949. The second largest

From the Council on National Defense of the American Medical Association. The new and previous press releases are by those of the Department of Defense.
—Editor

group 416 or 27.7 percent graduated between the years 1940-1944. Only 15 were medical graduates before 1940. Seven failed to reply to the question.

Years of internship and residency. By far the majority of those responding, 1,331 or 88.8 percent, had 1 year of internship training, while 158 or 10.5 percent had 2 years. Four physicians indicated no internship, while two reported 3 year internship training. There were 350 or 23.3 percent who had 3 years of residency training, while 334 or 22.3 percent had no residency. There were 260 or 17.3 percent with 1 year residency, 244 or 16.3 percent with 2 years, and 159 or 10.6 percent with 3 years residency training.

Occupation at time of entering service. At the time of entrance on active duty, 513 physicians were in residency training and 333 were engaged in specialty practice. There were 262 in general practice, 192 in internship, and 6 in industrial practice. A total of 193 reported in other practice and one failed to answer this question.

Number of physicians holding board certificates. Of the 1,500 physicians responding, 970 or 64.7 percent indicated that they held specialty board certificates. Of these, 87 were in the Army, 139 were in the Navy, and 44 were in the Air Force. The specialties covered were 18 different fields, of which the largest was surgery with 56, the second largest was podiatrics with 41, followed by internal medicine with 40. By branch of service, 17 percent of those responding in the Army held specialty board certificates, 21.8 percent of those in the Navy, and 12.5 percent of those in the Air Force.

Reserve status. Of the 1,500 reporting, 873 physicians retained a reserve commission, while 613 resigned their commissions. Fourteen failed to reply. In the Army, 944 out of 510 retained a reserve commission, while in the Air Force there were 198 out of 346. However, for the Navy, 501 retained commissions out of 630.

Distribution by rank at time of discharge. At time of separation from active duty, 766 physicians held the rank of first lieutenant or lieutenant (junior grade), 680 were captains or lieutenants, 40 were majors or lieutenant commanders, 6 were lieutenant colonels or commanders, and 5 were colonels or captains.

THE MEDICAL OFFICER WRITES

Articles Published in Other Journals

Artz C. P. Lt. Col. MC, USA, Howard J. M. Capt. MC, USAR and Frawley J. P. First Lt. MSC USA. Clinical observations on use of dextran and modified fluid gelatin in combat casualties. *Surgery* 37: 612-621 Apr 1955

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Byrne V. A. Col. USAF (MC). Brennan D. V. Lt. Col. USAF (MC). Roach H. W. Capt. USAF. Corneal burn produced by a missile: flash A. *Arch. Ophthalmol.* 53: 351-364 Mar 1955

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O'Leary F. First Lt. USAF (MC). Freckles. *Nursing World* 129: 15-16 29 Mar 1955

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PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army, Navy, and Air Force have recently received *temporary* promotions to the rank indicated

Medical Corps

Willard P. Are...	Lt. Comdr	USN	Lucas C. Hollister Jr.	Lt. Col	USAF
Kenneth R. Baldwin,	Cpt	USAF	Jam. H. Himes	Lt. Comdr	USN
William G. Bligh	Capt	USAF	Ralph M. Hood	Lt. Comdr	USN
D. L. S. B. Her	Capt	USAF	Edward A. Hotz	Lt. Comdr	USN
Burt N. B. B. tm re	Capt	USAF	Charles C. Houghton	J. Lt. Comdr	USN
J. h. J. B. tr	Lt.	USN	Vergil M. H. we	Cpt.	USAF
A. n. M. B. mst in	Cpt	USAF	William E. Huddleston,	Capt.	USAF
Robert W. Blalock	Lt.	USN	Thomas A. Huffman,	Lt.	USN
J. hn. E. B. ys	C. l.	USAF	Edward A. Hyne	Capt.	USN
J. h. M. Bo	Lt.	USN	William H. K. mny	Lt. Col	USAF
Edward J. B. wa,	Cpt	USAF	J. mes. B. K. nly	Lt.	USN
J. hn. W. Campbell	Capt	USAF	Harry N. Kukman,	J. Cpt	USAF
D. d. B. Carm. h. l. Jr.	Lt. Comdr	USN	L. u. C. K. uh	Col	USAF
E. er. t. M. Ch. lk	Col	USAF	William G. K. h	Lt. Comdr	USN
Phu. Coh	Cpt.	USAF	M. l. C. K. p. la	Cpt.	USN
J. ph. De. k. lbaum	Cpt	USAF	Edward P. Kuczk	Lt.	USN
M. l. a. D. l. ch. Jr.	Lt. C mdr	USN	Donald A. Kulima	Capt	USAF
R. be. t. M. D. mm. t.	Lt. C mdr	USN	Walt. r. W. L. rso	Cpt.	USAF
Mark S. D.	Cpt.	USAF	Charl. L. Lea	Lt. C mdr	USN
Will. m. L. Euba. ks	Capt.	USAF	Thomas H. Lew	Lt. Comdr	USN
Charlie F. dem	Capt	USAF	Zelig H. Li. berm	Capt	USAF
J. h. S. F. th. t.	Lt. Comd	USN	Richard E. L. wa	Lt. C mdr	USN
Walt. D. F. mbe. g	Cpt.	USAF	B. d. S. L. a,	Lt.	USN
Willard R. F. gus. n,	Cpt.	USAF	Donald E. Ll. yd	Lt. C mdr	USN
Joh. C. F. i. ga	Capt.	USAF	Kurt J. L. w	Lt.	USN
H. ry. F. g. lm. n,	Lt.	USN	Chal. S. Lueth	Lt. Col	USAF
Nathan I. E. F. wl	Lt. Comd	USN	R. bert. J. McCarthy	Lt. C mdr	USN
J. hn. J. F. d. k	Cpt	USAF	Robe. t. J. M. Coll. st. r	Cpt.	USAF
Elm. r. M. Fr. t.	Cpt.	USAF	Donald E. McC. l. lum,	Capt.	USAF
Frank D. Full. r	Lt. Comdr	USN	William B. McCurch. n	Capt.	USAF
R. nald. F. Ga. ey	Cpt.	USAF	Charl. J. M. G. ff	Capt.	USAF
J. m. H. G. ll	J. Cpt.	USN	Huan. W. M. denhall	J. Capt.	USAF
Joh. P. Gl. th	Capt	USAF	J. ph. A. Mont. m. rro	Cpt.	USAF
R. be. t. G. odw. n	Lt.	USN	Sam. I. L. Mo. ch. ll	Lt. C mdr	USN
Fankl. M. Gould	Capt.	USAF	J. ph. S. Mugl. a. l. t.	Lt.	USAF
H. wa. d. R. Gr. y	Cpt.	USAF	Robert E. N. ur. be. g. t.	Col	USAF
Martin O. Gre. y. Jr.	Lt. Comdr	USN	Thomas E. Nix	J. Lt.	USN
J. h. S. G. ugg. l	Capt	USN	Emil J. P. p	Cpt.	USAF
Edgat. L. Guinn,	Capt.	USAF	William F. Park	Lt. Comdr	USN
P. ul. K. H. m. lton. Jr.	Lt. Comdr	USN	Edwa. d. E. Parke	Lt. Comdr	USN
W. l. t. F. H. en	Lt. C mdr	USN	R. bert. A. Patt. r. n,	Col	USAF
B. tna. d. J. Harri	Capt	USAF	Salvato. e. A. P. nni. t.	Capt	USAF
J. me. H. Harris	Lt. Comdr	USN	Chester M. P. e	Lt.	USN
Albe. t. L. H. is	Capt.	USAF	Clinto. B. P. tt	Lt.	USN
Arch. A. H. f. m. n,	Col	USAF	Ri. hard. L. P. urc. au,	Cpt.	USAF

Medical Corps—Continued

F k S. P Cap USAF
 Job R Pry Cap USAF
 Mar R and Capt. USAF
 Albe L R hal Capt. USAF
 Richard L Rus II Cap USAF
 J h B R diedg Cap USAF
 Myr E. Samuel Lt. Comdr USN
 J h W Schma Capt. USAF
 R ha d H Sch de Lt. USN
 L l W S det tr m, Lt. C mdr USN
 Gil A Se Capt. USAF
 R be B Shep ds Cap USN
 B d D She L C mdr USN
 D na I M Shook Lt. Comdr USN
 Ea l S P Shr go L USN
 Franz H S ma n, Cap USAF
 H wa d W Smu h C pt. USAF
 Will m E Smu h, Cap USAF

L w ence R S herf d Lt. C l USAF
 Th ma H T be J L C mdr USN
 Ge g J T yf III L C mdr USN
 P T I Lt. USN
 Emm J Thorpe Cap USAF
 A A T tar J Lt. Comdr USN
 Edwa d H V Nun Capt. USAF
 L E W J L C mdr USN
 R be I W d Cap USAF
 Th do B W h l C pt. USAF
 J h P W lb J Lt. Comdr USN
 Do ald K Will Lt USN
 Theod H W l J Lt Comdr USN
 B na d J W lf Cap USAF
 Will am K Wood d L C md USN
 W y L W gh J Lt. Comdr USN
 L l M Zatz C p USAF

Dental Corps

L ce W Allbe k L USN
 R lph H B hlma Lt. USN
 Mar H B ke Lt. USN
 E g J Bar Cap USAF
 Gord P Bax L USN
 Will m J Bl k Cap USAF
 Fed F Bok k L USN
 J mes J B wa, J L C mdr USN
 F d k W Bum II Cap USAF
 R be L Caldwell L USN
 R be W Carp Capt. USAF
 J h M Ca Cap USAF
 Raymond L Ch n, Cap USAF
 J m D Chipl y J Cap USAF
 Vin P C l oo L USN
 J h y R Cl pp Lt. USN
 R be D Cull m, Lt. USN
 Sil R. D Capt. USAF
 Da d L Detam re Cap USAF
 Fly d J D ks L USN
 Da E. Do gla L USN
 N m A Ep n, L USN
 D l i E ks Cap USAF
 Ea l A. Ew n, L USN
 R b r t A. F ca L USN
 As D. F z, Cap USAF
 Am J F Cap USAF
 R bert H. G d J Cap USAF
 Edw C. G b Capt. USAF
 M l in L Gilbert L USN
 B y D Gr ham L USN
 Nd F Gus bet L USN
 G Hall Cap USAF
 Jul J D H be Lt. USN
 Will M. Hook Lt. USN
 Norbert R H bl Cap USAF

J hn D J b L USN
 J h T J L USN
 P ul J J h n, Cap USAF
 J m L J C p USAF
 G ld W K fld L USN
 Irv g H L ad naue L USN
 J m E L d m h C p USAF
 Charl W Ma h Lt. USN
 A bar E. Ma quar Cap USAF
 N be E M ty C pt. USAF
 J ph P M G II C md USN
 H w d B M Th er L USN
 Har ld E Mulkey Cap USAF
 E l L M h ll J L USN
 R b r t L M or L USN
 H ry T N m ra Cap USAF
 J mes E N rth Cap USAF
 Phil p G O brnk L USN
 Charl D O gr C pt. USAF
 Will am E Oyl Cap USAF
 Atr ham F P re J L USN
 Will m G P k n g, Cap USAF
 Ea l F P m j L USN
 Will m O P C p USAF
 Cha l F R II J L USN
 Cha l W R gg C p USAF
 All R b g l Lt. USAF
 R hard J R C p USAF
 L J S n be g Cap USAF
 Atsush S. Sa C pt. USAF
 Samuel Se de w z, Maj USAF
 J ph G Silve J Lt. USN
 Howa d N S n, L USN
 L on G S h L Co d USN
 Donald J T yf Cap USAF
 B jamin L Th ma Lt. USN

Dental Corps—Continued

Julian J. Thomas Jr. Lt. USN
 Howard A. Thomas Jr. Lt. USN
 James L. Turner Capt. USAF
 George W. Walter Jr. Comdr. USN
 Charles L. Weaver Lt. USN

Carl E. Welty Capt. USAF
 Jack L. West Jr. Capt. USAF
 Wilson T. Woelke Capt. USAF
 Martin H. Zaleski Capt. USAF
 Arthur H. Zinn, Capt. USAF

Medical Service Corps

Walter E. Beam Jr. Lt. USN
 Kenneth E. Beck Jr. Lt. USAF
 Willy M. Bord Jr. 1st Lt. USAF
 Louis G. Bow Jr. 1st Lt. USAF
 Joseph H. Brouillette Jr. Lt. USN
 Douglas S. Cherry 1st Lt. USAF
 Robert C. Cauch Jr. 1st Lt. USAF
 William M. Dail Jr. Lt. USN
 John N. Fingersh 1st Lt. USAF
 Norman L. Foman Lt. USN
 Andrew J. G. Fox Jr. Lt. USN
 Eugene F. Ham Jr. 1st Lt. USAF
 Harwin M. Hall Jr. Lt. USN
 Godfrey S. Huber Lt. USN
 Harold L. Johnson Jr. 1st Lt. USAF
 Richard R. L. P. Key Jr. 1st Lt. USAF
 Calman L. Lamb Jr. Lt. USN

William W. Math Jr. 1st Lt. USAF
 Dallan H. Markun, 1st Lt. USAF
 Francis E. McGuire Lt. USN
 Allan E. McWhorter Jr. 1st Lt. USN
 John A. Moody Lt. USN
 Ralph P. McKee Jr. Lt. USN
 Lucie E. Puckett Lt. USN
 John P. Quinn Lt. USN
 Joseph F. Ramsey Jr. Lt. USN
 Burton G. Sall Jr. 1st Lt. USAF
 Edwin F. Sobol Jr. 1st Lt. USAF
 Hubert D. Sumner Jr. 1st Lt. USAF
 Russell J. Thomas Jr. 1st Lt. USAF
 Edgar W. Tuggerly Jr. Lt. USN
 Raymond A. Weger Jr. Lt. USN
 Bernard M. Winters Jr. 1st Lt. USAF

Nurse Corps

Lucy B. Barber Jr. 1st Lt. USAF
 Nell C. Borow Jr. 1st Lt. USAF
 Florence H. Brown, Capt. USAF
 Johanna E. Buchal Jr. 1st Lt. USAF
 Anna M. Burr Jr. Lt. USN
 Adeline C. Iwczak Jr. 1st Lt. USAF
 Rose M. Clements Lt. USN
 Theodore M. Copp Jr. 1st Lt. USAF
 Helen T. Daniel Jr. 1st Lt. USAF
 Patricia A. Duffy Jr. 1st Lt. USAF
 Ludean K. Esch Jr. 1st Lt. USAF
 Anna M. E. Sovick Jr. 1st Lt. USAF
 George O. Fisher Jr. Lt. USN
 Pearl Y. Gipe Jr. Lt. USN
 Mary B. Giddens Jr. 1st Lt. USAF
 Golda D. Gertler Lt. USN
 Dora A. Giffith Jr. 1st Lt. USAF
 Annabell M. Grywaluk Jr. 1st Lt. USAF
 Helen G. Grant Jr. 1st Lt. USAF
 Audrey C. Haley Jr. 1st Lt. USAF
 Regina R. Hall Jr. 1st Lt. USAF
 Marilyn Hunt Jr. 1st Lt. USAF
 Jeanne T. Hyde Jr. Capt. USAF
 Roberta T. M. Jull Jr. 1st Lt. USAF
 Alvin K. Kelly Jr. 1st Lt. USAF
 Daisy L. L. Skford Jr. 1st Lt. USAF
 Theresa C. Leonard Jr. 1st Lt. USAF
 Arlene F. Lewis Jr. 1st Lt. USAF
 Dolores M. Markley Jr. Lt. USN

Dorothy A. Mayak Jr. 1st Lt. USAF
 Myrle M. McConkey Capt. USAF
 Frances M. Codd Jr. USA
 Joseph E. McDonald, 1st Lt. USAF
 Betty E. M. Smith Jr. USA
 George W. Miller Jr. 1st Lt. USAF
 Barbara Moulden, 1st Lt. USAF
 Mariann R. M. Glavin, 1st Lt. USAF
 Doris M. Munson Capt. USAF
 Ila S. N. Holm Jr. Maj. USA
 Marjorie A. B. Pratt Jr. Lt. USA
 Lillian R. P. K. 1st Lt. USAF
 Mary M. Prentiss, Maj. USA
 Helen E. Pugliese Jr. USA
 Norma A. Rys Jr. 1st Lt. USA
 Amanda E. Schuchmann Jr. USA
 Elizabeth F. Sedgwick Jr. USA
 Mildred M. Smith, Lt. USN
 Vivian E. Smith, Lt. USN
 Connie Soap Jr. Maj. USA
 Ruth M. Steenburgh Jr. USA
 Katherine F. Strickland Jr. USA
 Lois M. Thomas Capt. USAF
 Mary A. Tison Jr. Capt. USAF
 Margaret D. Wall Jr. Maj. USA
 Rebecca W. Hetherington Jr. USA
 Margaret H. Wheeler Jr. Maj. USA
 Elizabeth A. Wilde Jr. USA
 Martha J. Yancy Jr. USA

NEW CHIEF OF ARMY NURSE CORPS

Lieutenant Colonel Inez Haynes has been named Chief of the Army Nurse Corps to succeed Colonel Ruby F Bryant whose 4 year statutory term as Chief expires 30 September.



The rank of Colonel will be given the new chief on 1 October when she will be sworn in with appropriate ceremonies in the office of Major General Silas B. Hayes, Surgeon General of the Army. Until that date Colonel Haynes will serve as Deputy Chief of the Army Nurse Corps, filling the vacancy caused by the retirement of Lieutenant Colonel Rosalie D. Colhoun.

Colonel Haynes entered on active duty at Fort Sam Houston, Texas, 1 December 1933. She has had overseas service in the Philippine Islands, the Pacific Theater, and in Europe. Her last duty assignment before coming to Washington was at the University of Minnesota, from which she was graduated in June 1935 with a B.S. degree in nursing education.

ITEMS OF HISTORICAL INTEREST WANTED

Anyone having military medical items of equipment, photographs, paintings of a historical nature are requested to loan or donate those items to the Army Medical Museum, Block Army Medical Center, Fort Sam Houston, Texas. For further information and shipping instructions, write the Museum Office, Medical Field Service School, Fort Sam Houston, Texas. Loaned or donated property will bear the name of the contributor when the item is on display.

Reviews of Recent Books

HANDBOOK OF RADIOLOGY edited by *Russell H Morgan M D* and *Kenneth E Corrigan Ph D* 518 pages illustrated The Year Book Publishers Inc Chicago Ill 1955 Price \$10

Next to retaining within one's mind a vast store of useful and essential data the easy accessibility in a handbook to such information is most desirable

This book is intended for use by all workers in the field of ionizing radiations clinical experimental and industrial It is a compilation of quantitative data assembled in six sections and four appendixes and presented generally in tabular and condensed form The first section includes numerous definitions of physical terms and units and conversion tables of physical factors The definitions are concise but have sufficient clarity for an adequate understanding of each term

The remaining five sections concern general physical information radiotherapeutic data including depth dose tables and radium dosimetry radioisotopes radiography and fluoroscopy and radiation protection The four appendixes list drugs commonly used in radiology mathematical tables the Greek alphabet and diagrams of x ray generators and particle accelerators

It is apparent that future editions will be necessary to keep pace with the expanding knowledge in radiology Questions might then arise as to what might be included or omitted in order to keep the size of the book within reasonable limits I believe that mathematical tables are readily available in many forms and might well be considered as superfluous Similarly roentgenographic technic is covered rather sketchily as compared to the standard texts on this subject and could be deleted particularly because individualized technics are used in most radiological departments

Nevertheless these criticisms do not detract from the value of the book Those for whom the work is intended will doubtless have numerous occasions to refer to it —HARRY L BERMAN Col MC USA

THE TUBERCLE BACILLUS in the Pulmonary Lesion of Man by *Georges Caletti M D* 226 pages illustrated Springer Publishing Co Inc New York N Y 1955 Price \$8.50

The title of this book could lead to the belief that it is best suited to the needs of the pathologist and the bacteriologist It is however as important for the practicing physician as it is a reference source for the laboratory scientist and the student of tuberculosis In this study many of the complex and dynamic phenomena of host reaction in tuber-

eulosis to aggregate (parasitic) forces discussed in detail are applicable to and illustrative of infectious diseases in general and the book provides magnificent and fascinating detail of the natural history of the disease process in experimental animal and human beings. This latter achievement is of paramount importance for the physician's opportunity to improve his insight into and understanding and management of clinical problems is equally determined through the study of a disease process in great detail as in the experience gained through treating large numbers of patients.

The organization of content is excellent and provides the potential of a solid educational experience. In the beginning is a basic review of the histology of the various kinds of lesions in pulmonary tuberculosis. Next the author presents the cellular characteristics of the lesions in man and experimental animals. These aspects are then integrated into the histobacteriologic point of view to provide a means for evaluating concepts of immunity and allergy. Then follows an exciting and truly stimulating conclusion as to how the histobacteriologic features of the lesions enter into the successes and failures of treatment and how this basic information may be used to predict trends, expectations and problems in the future. The bibliography is entirely satisfactory. There are many tissue sections for illustration but they have the disadvantages of poor contrast and reality images inherent in black and white sections as over and against the vitality and descriptiveness of color.

The book is based on the author's experience with autopsies of 1500 patients who died with tuberculosis over a 10 year period. He correlated all his findings statistically with the clinical and radiologic records of each patient. In this way he provides for the first time in English a detailed study of the histobacteriologic features of pulmonary tuberculosis in man — JAMES C. SYNER, Cpt MC USA.

HANDBOOK OF TREATMENT by H. Id. Th. ma. Hyman, M.D. 511 pages
J. B. Lippincott Co., Philadelphia, Pa. 1955. P. \$8.

In this handbook Doctor Hyman has compiled a readily accessible practical and sensible approach to modern therapy. He has ranged disease entities through more important clinical symptoms such as dyspnea and edema and the major drugs or drug classes such as antibiotics and diuretics in alphabetical sequence. The addition of many well arranged tables will afford much convenience to the reader and perhaps the most valuable feature of the book.

There is probably nothing so maddening as trying to keep a textbook up to date with the changes in treatment and this book though issued in 1955 has no comment on metacort and metacortindralone, cycloserine, the ersenes, the new antipolio immunization, mylran, insulin lete and others. Although the author has endeavored to eliminate outmoded preparations, he still has retained many of them.

There are a few errors, but the most serious criticism concerns the lack of a section on acute poisonings and other emergencies such as asphyxiation and drowning. The early management of burns should have been included because it deservedly belongs to the internist and general physician.

Doctor Hyman is to be commended for such an excellent book. Frequent revisions will be required to keep it as current as other texts devoted to therapeutics. —JULIAN LOVE Capt. (MC) USN

REGIONAL ENTERITIS by Fredrick F. Boyce M.D. 84 pages illustrated
J. B. Lippincott Co. Philadelphia Pa. 1955 Price \$2.35

This pocket sized monograph presents material previously published in the *American Practitioner and Digest of Treatment* for September 1954. In an interpretation of the author's experience with regional enteritis he stresses the importance of the disease and gives his personal experiences and a review of the recent literature.

The increased incidence of regional enteritis, the wide range of its clinical manifestations and the discouraging therapeutic results with both medical and surgical management are ably discussed. Etiologic considerations, the pathologic process and the anatomic distribution of the disease are presented. An effort is made to correlate pathologic and clinical manifestations and to stress the diffuse nature of the disease. The clinical and diagnostic problems encountered are discussed briefly, clearly and to the point. Seven case histories are presented to illustrate all the points made. The section on therapeutics is complete from the viewpoint of the internist and the surgeon. The problem of recurrence in the adult and the nonrecurrent nature of the disease in children is considered.

This monograph is recommended as an excellent reference for the medical student, the general practitioner and the specialist.

—WILLIAM STEIN Lt. Col. MC USA

EARLY CARE OF ACUTE SOFT TISSUE INJURIES Committee on Trauma
1st edition. 192 pages American College of Surgeons Chicago Ill.
1954

This manual is a guide for the early treatment of traumatic lesions exclusive of fractures. It is particularly valuable as an objective standard of surgical practice in the treatment of traumatic lesions. The effort by the Committee on Trauma of the American College of Surgeons to formulate such a standard is highly commendable and important in view of the present world situation, the possibility of renewed conflict and also the great accident toll in this country.

The subject material of the manual is presented in a series of chapters on the general principles of wound care, first aid, physical examinations and regional problems of the neck, head, spine, face, abdomen, thorax, etc. A rather extensive coverage is made of each region and compartment of the human body. Burns, amputations, hand injuries

that smoking plays a role in the etiology of lung cancer. For these reasons he considers a sound Doctor Ochsner's advice that man would profit were he to refrain from the use of tobacco in any form. However the subject of the cause of lung cancer (or of any cancer) is so complex that he cannot accept as a fact the statement that cigarettes cause cancer.

This book is recommended reading for all who are interested in the subject of lung cancer. And who isn't?

—CLIFFORD F. STOREY, Capt (MC) USN

CARE OF LABORATORY ANIMALS, A manual prepared by the Subcommittee on the Care of Laboratory Animals, National Research Council, National Academy of Sciences, Washington, D. C., 1954, 66 pages, \$1.00. Published by the American Psychological Association, New York, N. Y., 1954, Price \$0.75.

This manual is an attempt to fulfill a need for a simplified guide to the proper care of laboratory animals. It is written largely in outline form and presents a concise summary of the information which those charged with the routine care and management of laboratory animals need. No attempt is made to present detailed explanations of these procedures.

The exclusion of certain background material such as the principles of sanitation and housing may be questioned. This format is presented however will be of considerable value to animal caretakers when supplemented by explanations of the basic principles involved. Information is presented on mice, rats, guinea pigs, rabbits, hamsters, cotton rats, ferrets, cats, dogs, monkeys, sheep and goats, domestic fowl and fogs. Other sections also are presented on the control of laboratory pests and parasites, food selection and storage and control of some laboratory animal diseases.

This bibliography made adequate and reflects the need for a guide that will lay the foundation for a standardized method of raising and caring for laboratory animals by pointing out the proved principles and practices according to which an animal colony should be operated.

—ROBERT D. HENTHORNE, Capt, VC USA

GOOD GENERAL PRACTICE, A Report of a Survey by Stephen T. Taylor, M.D., M.R.C.P., 604 pages, illustrated, Oxford University Press, New York, N. Y., 1954, Price \$3.50.

This study of the daily professional routine and working arrangements of nearly 100 outstanding British general practitioners was sponsored by the Nuffield Provincial Hospitals Trust as a means of providing suggestions for improving the standards of general practice. Previous reports which covered rather striking conditions among general practitioners at the lower end of the professional scale indicated the need for study of this type.

For periods of one to five days the author visited selected practitioners studying all phases of their working conditions and accompanying them on calls and office visits. In analyzing his material he makes very little use of the various adjuncts of the statistical method but presents instead a remarkably clear and frank discussion of high grade general practitioners functioning under the National Health Service Act. The author draws on earlier reports for examples of poor practice and describes in detail practical means for advancing toward the level of the best practitioners. The writing is warm friendly tinged with humor almost chatty at times and never stilted or contrived. This is an extremely frank and revealing book.

As he presents detailed practical suggestions for improving the standards of medical care the author gives us an intimate view of the best and worst of general practice in England.

A sidelight on the paper work situation is seen in the corset certificate which brings the doctor irritation and a fee equivalent to 28 cents. Another interesting certificate covers pregnancy milk eggs soap and other unspecified commodities.

While the book is intended primarily for general practitioners in Great Britain it is of unusual interest to the medical profession in this country. The open unreserved treatment of a subject with such controversial implications makes fascinating reading for all concerned with medical care whether friends or foes of the concept of socialized medicine.—ROBERT L. WARP *Capt (MC) USN*

THE LUNG by Julia H. Comroe Jr. M.D. Robert F. Foster II M.D. Arthur B. Dubois M.D. William A. Briscoe M.D. and Elizabeth Calen, A.B. 219 pages illustrated. The Year Book Publishers Inc. Chicago Ill. 1955. Price \$5.00.

In their preface the authors write they are writing for doctors and medical students to explain in simple words and by means of diagrams those aspects of pulmonary physiology that are important in clinical medicine.

The book is very well illustrated by means of diagrams and charts. The presentation is orderly and logical. The various chapters treat of basic information on lung volume pulmonary ventilation, circulation and ventilation blood flow rates diffusion of gases and mechanics of breathing.

Although the vital information is succinct its presentation assumes that many doctors and most medical students are expert in physical chemistry mathematics, and diagrammatic. Because this reviewer can not claim distinction in any of the three fields he found the reading difficult and comprehension elusive.

Physiologic texts illustrate only how disease has altered function. Thus pulmonary function studies cannot tell where or what the lesion is or if it does not interfere with the function of the lung even if a

lesion exists Hence such studies can never replace a careful history thorough physical examination and radiologic bacteriologic bronchoscopic or pathologic investigation

It is questionable whether pulmonary function tests because of their complexity are comparable in clinical applicability to tests of hepatic renal cardiovascular and neuromuscular functions The monograph is well adapted for the graduate student in physiology but fails to clarify the capsular comprehension of the calcified clinician

—CHRISTOPHER C. SHAW Capt (MC) USN

SEGMENTAL ANATOMY OF THE LUNGS by Edward A. Boyd, Jr., Ph.D.
276 pag. Ill. and Th. Black & D. M. Graw Hill Book Co.
I. N. W. Y. N. Y. 1955 P. \$15

This comprehensive and well illustrated anatomic text dealing with the most infinite and minute details of the segmental bronchi and related pulmonary vessels will serve as a valuable reference for the thoracic surgeon bronchoscopist roentgenologist pathologist pulmonologist and any physician interested in the clinical problems pertaining to pulmonary diseases

The first chapter depicts a interesting historical review of the evolution of gross anatomic concepts and knowledge derived from centuries of study and investigations directed at the human bronchopulmonary tree The next eight chapters analyze the prevailing gross structural patterns of the segmental subdivisions of the bronchial and vascular distributions Descriptive sketches illustrating in contrasting colors are used to portray a realistic text of such anatomic entities as viewed from all pleural surfaces and angles The basic terminology devised by Jackson and H. Bethe generally accepted internationally has been followed by the author some exceptions and additional anatomic descriptive terminology based on location of peripheral anatomic structures has of necessity due to detailed minute anatomic mappings been introduced

The ninth chapter concerns the stage development of the human lungs and summarizes the present concepts pertaining to some of the gross congenital anomalies This chapter is thoroughly interesting and provocative and is offered as an excellent clinical reference

The tenth and last chapter is brief and is actually a introductory legend for the latter 12 color plates (each having a separate legend) which depicts the complete anatomy of two sets of normal human lungs yet one pair presents 24 bronchial or vascular deviations from what the author has statistically established as prevailing anatomic pattern The second pair of lungs contains 23 minor deviations from prevailing pattern

The author realized early in this investigatory anatomic study that the pulmonary segments presented seemingly needless variations in their arrangement of parts yet he has after nine years of intense dissec-

tion and study been able to establish empirical prevailing patterns which tend to somewhat simplify the most difficult of all gross anatomic structures

This text is recommended as a valuable reference for all students, instructors, and clinicians interested in pulmonary problems and will no doubt become part of all professional libraries at home and abroad

—JOHN M. SALYER Col. WC USA

SPORTS INJURIES Prevention and Active Treatment, by Christopher Woodard
2d edition 128 pages illustrated Published by Max Parrish & Co
Ltd London W.L. Distributed by Tack & Field New Los Altos Calif
1954. Price \$3

This small volume was written for the guidance of trainers, coaches, masseurs, and physiotherapists. It is an impassioned plea for the active treatment of injuries sustained while engaged in sports, which the author states will bring far better end results in 99 cases out of 100 than will the traditional conservative treatment by a nonspecialist in this field. Active treatment is defined as avoiding splinting, heat, or massage and instituting stretching and exercise early. Considerable stress is placed on preconditioning for prevention of such injuries, but many of the ideas are expressed in archaic terminology, as an example ox liver concentrate is recommended as a panacea because it "tunes up the liver."

Much space is devoted to training techniques, and about half of the volume deals with definite injuries. Although the author signposts the type of case which should be given expert medical attention, he prescribes methods of treatment for specific diseases and injuries that are not commonly used by American surgeons. The style is informal, and injuries of numerous prominent British athletes are discussed as examples in the arguments presented. This volume has value to surgeons only for information as to the type of treatment trainers and coaches use on their athletes unless closely supervised.

—JOHN H. SPILLANE Lt Col. MC USA

DRUGS IN CURRENT USE 1955 edited by Walter Modell M.D. 148 pages
dictionary style Spring Publishing Co. Inc. New York N.Y. 1955
Price \$2

This little soft-cover book is an alphabetical listing of the more commonly used drugs. The principal pharmacologic characteristics, properties, actions, dosage, et cetera are tersely mentioned. It is said to be "reliable as the best hospital formulary anywhere" and comprehensive enough to be universally useful.

Unfortunately its shortcomings would seem to limit its usefulness. A number of clearly obsolete or unimportant drugs are mentioned, e.g., rosemary oil and persic oil. Checking on benadryl, one is referred to diphenhydramine U.S.P. From there one is told to see antihistamine drugs. Certainly there seems to be an unnecessary step involved. Other criticisms could be noted. The dosage schedule of penicillin

is grossly inadequate. Some drugs g INH are not listed when one finds the class to which they belong although they may appear under their brand name. The manufacturer is not listed and the physician has no way of checking on this point. Certain proprietary preparations are omitted from lists of similar drugs.

The basis for the descriptions are the *U S Pharmacopeia National Formulary New and Nonofficial Remedies Modern Drug Encyclopedia* and similar sources. Little seems to be gained in this condensation of that material. Furthermore the *Physician's Desk Reference* would appear to be more helpful.—S O WAIFE Lt (MC) USNR

BASIC SCIENCES IN ANESTHESIOLOGY (A Guide for Study), by Arthur B. Trow, M.D., M.S., 2d ed., 274 pag., The Lydell Publishing Co., San Antonio, T., 1955, P., \$5.

This manual was prepared as a guide to assist members of the medical profession in preparing for the examinations of the American Board of Anesthesiology. It is not designed to substitute for comprehensive reading but is an outline of study accompanied by copious references.

Questions from written examinations given in previous years are answered and the specific reference given. Most discussions are brief and to the point. The few apparent errors are those in which only one viewpoint of controversial question is presented.

In addition to questions and answers with references, there is a list of recommended books for a personal basic library for the specialist in anesthesiology. The manual is paper bound with loose leaf type pages on plastic rings. The reviewer considers the price well spent if the manual is used in the manner and for the purpose for which it is designed.—HOWARD K. PEDIGO Lt Col MC, USA.

CLUES IN THE DIAGNOSIS AND TREATMENT OF HEART DISEASE by P. I. D. White, M.D., Am. L. Tur, Se. P. Bill, C. N. mb, 242 A. M. g. ph. Th. B. r. D. f. Am. L. tur. Circula. Ed. d. by Irvine H. P. g. M. D. d. A. C. C. n. M. D. 186 pag. H. tr. d. Ch. l. C. Th. ma. P. bl. h. Sp. g. f. ld. Ill. 1955, P., \$5.50.

This book has been written for its purpose and title. In it the author presents in brief and compact style those features of cardiovascular examination and treatment which he has found to be of practical and decided value. The historical and elaborate method of study which is carried out in the cardiology department are not discussed because it is the author's intent to emphasize the important features of method of examination applicable to the majority of practicing physicians. Maximum attention is given to the important clues to be found or searched for in the patient's history. Physical signs, roentgenology and electrocardiography are discussed less fully. The index is superior. Although the book is not a complete text on cardiology and does not pretend to be, it is an excellent book for the medical student and of interest to the cardiologist.—THOMAS W. INNON Lt Col MC, USA.

THE HISTORY AND CONQUEST OF COMMON DISEASES edited by *Walter R. Bell* 334 pages The University of Oklahoma Press Norman Okla 1954 Price \$4

The preface of this collection of 17 articles by prominent British and American physicians states it is intended mainly for patients but also for the medical profession. Among the subjects discussed are acute communicable diseases influenza pneumonia rheumatism arthritis heart disease venereal diseases tonsillitis and adenoiditis appendicitis epilepsy and cancer.

Most of the articles describe the status of knowledge on the subject in the ancient cultures that flourished around the eastern end of the Mediterranean in the pre-Christian eras. The growth of this knowledge or the variations in misbelief as is often the case are then traced to modern times. The book emphasises the fact that the great bulk of existing medical knowledge is less than a century old. Some of the articles devote much space to the unenlightened gropings of the ancients and too little to the scientific developments of recent times.

Because the book is intended for both patients and physicians it does not well fit either. It is too thin for the physician and it presumes a degree of erudition which the average American reader does not have. In spite of a five page glossary of medical terms it still contains many unfamiliar words and phrases. About a tenth of the pages are devoted to references and suggestions for further reading. Some are in foreign languages.

By some happy fortune a chapter on malingering is included in the book. There was little mention of it in ancient times apparently under the prevailing pagan influences there was so little sympathy for human suffering that the simulation of disease was not likely to be a profitable procedure in those times. Conversely the spread of Christian influences with their emphasis on charity gave rise to many abuses which encouraged feigned diseases. In the middle ages children were mutilated to better serve as beggars. Religious hoaxes involving stigmatization and miracle cures were frequent. This probably is the best chapter in the book —HARTWIN A. SCHULZE Col USAF (MC)

SURGERY OF THE SMALL AND LARGE INTESTINE A Handbook of Operative Surgery by *Charles W. Mayo M.D.* 340 pages illustrated by *Russell Drake Th. Ye* Book Publisher Inc Chicago Ill 1955 Price \$9

This handbook presents concise descriptions and illustrations of the more common surgical procedures employed in treating lesions of the small and large intestine including the rectum. It is complete and thorough in describing the pre and post operative management. Several pages are devoted to minute details of low residue liquid and solid diets as well as formulas for tube feeding and intravenous medications. The gross anatomy blood supply lymph drainage errors and pitfalls of each operation are covered fully in the text and by illustrations.

The format of the book is excellent. On the left hand pages the text is presented along with a description of the illustration on the opposite pages. This means that about half the book is composed of illustrations showing step by step the operations recommended. These illustrations are simple but excellent in that they include the essential features and omit the extraneous details.

Many surgeons may disagree with some of the recommended operations for regional ileitis and ulcerative colitis especially those in which short circuiting is advocated leaving infected diseased feces laden loops of intestine in the abdominal cavity. Also it would have been better to omit the portion on anal diseases and leave it to another volume rather than to try to cover this large field in four pages of text and four of illustration. The latter in this particular portion of the book tend to obscure the text instead of revealing its meaning.

To the surgeon or general practitioner who occasionally ventures into the field of intestinal surgery and to the resident or surgeon who wants a quick brush up in method and technic before surgery this book is highly recommended. For these the volume fills a real need and does it well.—**LAWRENCE L. DEAN** Capt (MC) USN

GESTATION T t f th F rs C f t M h 9 10 d 11 1954
P N J d t d by Lou B Fl ne M D 238 p ge 11
trated Spo d by h J h Ma y J Fou d t N w Y k N Y
1955 P d th U t d Stat f Am by C l Ma y & C
l e N w Y k N Y 1955 P \$5

This volume is an authoritative compilation of the thinking of world authorities on such subjects as the functional role of the placenta sugar transport in the ungulate placenta and the anatomy of the placental barrier. It brings together the opinion of outstanding anatomists physiologists embryologists pathologists obstetricians zoologists psychiatrists and oncologists. In this conference report a group of discussants representing a wide variety of scientific specialties endeavor to obviate the obstruction to mutual understanding which normally exists between the many disciplines and specialties in the general field of science.

The conference takes the form of discussions among the 25 participants and must be read to be appreciated. Conclusions are not drawn but the subjects of placenta placental physiology especially with respect to sugar transport in mammals and ungulates and the anatomy and physiology of the placental barrier in higher mammals are thoroughly ventilated. A useful appendix containing a classification of all the presently known enzymes of the human placenta completes the work.

This volume is a valuable presentation of a complicated subject discussed from various scientific approaches. It should be of help to students and practitioners of medical as well as allied sciences.

—**ALBERT T. WALKER** Capt (MC) USN

Furthermore he has chosen to continue to use terminology that respiratory physiologists have largely discarded

This book fulfills the need for an informative but not exhaustive text dealing with respiratory diseases. The idea of applying the concept of a complete medical diagnosis to pulmonary disease (as long advocated by the New York Heart Association in cardiac diseases) is appealing.—CHARLES S CHRISTIANSON Lt Col MC USA

KINESIOLOGY OF THE HUMAN BODY Underhill and Phelps (1955)
 Edited by Arthur Stulen and Edgar FACS FICS (11)
 FRC S 708 pages Illustrated Chapters 1-10 Published September
 1955 Price \$19.75

Early in this volume the author contends that it is possible with reservations to analyze and calculate human motion in the same way that it is possible to analyze and calculate the movement of mechanical devices. The reservations required are not in his opinion of sufficient importance to vitiate the practical value of the mathematical computations. He then proceeds to a discussion of the physical properties in the normal and abnormal states of the various tissues that make up the human locomotor system and analyzes the effect of mechanical forces on these tissues. With this background of information there follows a discussion of the mechanical structure of the spine and the joints of the extremities.

The work is well printed and bound and well illustrated. Complete author and subject indexes enhance its value. This volume will find a great use in reference libraries and will appeal particularly to those who desire a more complete understanding of the underlying mechanical laws which pertain to producing abnormalities of the structure and function of the locomotor systems.

—JOHN H CHIEFFEY Colonel (MC) USA

THE YEAR BOOK OF UROLOGY (1954-1955 Year Book Series) Edited by William W. Lloyd Stetten and Philip D. 372 pages Illustrated Third Year Book Published in Chicago 1955 Price \$6

This annual volume abstracts 316 contemporary articles from the field of urology accompanied by sparse illustration. Many abstracts are accompanied by comments by the editor. These sometimes seem arbitrary but are supported by references to other articles past and present. The subject matter is divided anatomically and there are separate author and subject indexes.

Although this is the best compilation of current urologic writing available to us it is unfortunate that there appears to be some bias in the selection of publications to be reviewed. For example, some 22 articles are abstracted from the Scandinavian but none from the Spanish, Italian or German fields. No references were noted to the British Journal of Urology. The format and execution are excellent.

—CHARLES W. HOFFMAN Jr Lt Col MC USA

New Books Received

Books received by the *U. S. Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be selected for review in a later issue.

- THE POSTURAL COMPLEX** Observations as to Cause, Diagnosis and Treatment by Laurence Jones M. D. 156 pages illustrated Charles C. Thomas Publisher Springfield Ill. 1955 Price \$9.75
- MODERN TRENDS IN PSYCHOSOMATIC MEDICINE** edited by Desmond O'N. 375 pages Paul B. Hoebe Inc. New York N. Y. 1955 Price \$10.50
- ROENTGEN INTERPRETATION** by George W. Holmes M. D. and Laurence L. Robbins M. D. 8th edition 525 pages 371 illustrations Lea & Febiger Philadelphia Pa. 1955 Price \$10
- ORAL AND DENTAL DIAGNOSIS** With Suggestions for Treatment by Kurt H. Thoma D. M. D. F. D. S. R. C. S. E. g. Hon. F. D. S. R. C. S. Edin. and Hamilton B. G. Robinson D. D. S. N. S. 4th edition 449 pages 928 illustrations 55 netolo W. B. Saunders Co. Philadelphia Pa. 1955
- COUNSELING IN MEDICAL GENETICS** by Sheldon C. Reed 268 pages W. B. Saunders Co. Philadelphia Pa. 1955
- THE JOSIAH MACY JR. FOUNDATION 1930-1955** A Review of Activities 174 pages The Josiah Macy Jr. Foundation New York N. Y. 1955
- SYSTEMIC LUPUS ERYTHEMATOSUS** Review of the Literature and Clinical Analysis of 138 Cases by A. McGehee Harvey M. D. Lawrence E. Shulman M. D. Philip A. Tumulty M. D. C. Lockard Conly M. D. and Edyth H. Schoenrich M. D. 437 pages illustrated The Williams & Wilkins Co. Baltimore Md. 1955 Price \$3
- EXPERIMENTAL PSYCHOLOGY** A Series of Broadcast Talks on Recent Research by A. J. Watson, Harry Kay, J. A. Dutsch, B. S. Farrell, Michael A. Gyle and R. C. Oldfield Edited by B. A. Farrell 66 pages Philosophical Library New York N. Y. 1955 Price \$2.75
- THE BODY FLUIDS** Basic Physiology and Practical Therapeutics by J. Russ H. Elkinton M. D. and T. S. Danowski M. D. 626 pages illustrated Williams & Wilkins Co. Baltimore Md. 1955 Price \$10
- ANNALS OF THE NEW YORK ACADEMY OF SCIENCES** Volume 63 Art. 1 page 1144 July 15 1955 Edited by Roy Waldo M. ne The Regulation of Hunger and Appetite Conference Chairman and Conference Editor Franklin Holla 143 pages illustrated The New York Academy of Science New York N. Y. 1955 Price \$3
- ANNALS OF THE NEW YORK ACADEMY OF SCIENCES** Volume 61 Art. 3 page 637-736 July 8 1955 Edited by Roy Waldo M. ne Bofla onoid and the Capillary Conference Co-Chairmen Gustav J. Martin and Alb. S. Gyo. Gyl. Co. ult. g. Editor Gustav J. Martin 98 pages illustrated The New York Academy of Science New York N. Y. 1955 Price \$3

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES V 1 m 60 Art 3
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 N Y 1955 P \$4 50

DIFFERENTIAL DIAGNOSIS OF LEUKOPLAKIA LEUKOKERATOSIS AND
 CANCER IN THE MOUTH by A br L W l h M S M D Ame
 L tur S P bl t N mb 267 A M gr ph Am
 Le tur D rm l gy ed t d by A th C Curt M D 62 p g
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SEXUAL PRECOCITY by H gh J lly M A M D (Camb) M R C P
 Am L t Se P bl N mbe 200 A M g ph
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 Ed d by W ll d O Tbomp n M D 276 pag 11 d Ch l
 C Th m P bl h Springf ld Ill 1955 P \$6 75

SURGERY OF THE STOMACH AND DUODENUM A Handbook f Ope t
 S g y by Cl ud E W l h M D D Sc (h) Ill tr ted by
 M n l W L t h M ll 2d d d 370 p g 11 t d
 Th Y ar B k P bl h l Ch g Ill 1955 P \$9

IONIC INTERPRETATION OF DRUG ACTION IN CHEMOTHERAPEUTIC
 RESEARCH by Al x d V T l t h M D Ph D 276 p ge
 ll tr ed Ch m cal P bl sh g C I N w York N Y 1955
 P \$10

NEUROGLIA M rph l gy nd Fun ti by P l Gl M A Ph D M O
 Ame ic L tur Se te P bl t N 260 A Mo gr ph in Am ca
 L tur in N ur l gy Ed d by Cba l D A g M D 111 p g
 llustrat d Cha l C Th ma P blish Sp ingf ld Ill 1955 P \$5

INSTRUCTIONS FOR AUTHORS

The *United States Armed Forces Medical Journal* is devoted to the publication of original investigations observations and clinical experiences of interest to personnel of the medical services of the three military departments Contributors who are affiliated with one of the military services in a commissioned enlisted or civilian capacity should forward manuscripts to the Surgeon General of the United States Army Navy or Air Force Washington 25 D C in accordance with existing regulations The covering letter should state that the author desires the manuscript to be given consideration for publication in this *Journal* Other authors should send manuscripts directly to the editor Accepted manuscripts become the property of the Armed Forces Medical Publication Agency and will not be returned

MANUSCRIPTS

An original typewritten copy of each manuscript with wide margins on unruled paper size 8 by 10½ inches must be submitted Carbon copies are not acceptable All written matter including references must be double-spaced Articles are accepted with the understanding that they are submitted solely to this *Journal* and that they will not be reprinted without the permission of the editor A brief factual summary which is complete in itself should conclude each paper The editors reserve the privilege of editorial modification The senior author will be furnished with a carbon copy proof of his article prior to publication Authors alone are responsible for the accuracy of their statements

REFERENCES

References to published literature should be listed at the end of the article in the numerical order in which they are cited in the author's text Care and accuracy in their preparation will expedite publication of the article Following are correct examples of references

Fleming A Young M Y Suchet J and Rowe A J E Penicillin content of blood serum after various doses of penicillin by various routes *Lancet* 2 621-624 Nov 11 1944

Cabot R C Pernicious and secondary anemia chlorosis and leukemia In Osler W (editor) *Modern Medicine* 3d edition Lea & Febiger Philadelphia Pa 1927 Vol 5 pp 33-100

FIGURES AND TABLES

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CLINICOPATHOLOGIC CONFERENCE

CASE REPORTS

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Monthly Message

This is the first of two messages based upon an address given by President A. Whitney Griswold of Yale on the practical value of a liberal education at the Cum Laude Convocation at Phillips Exeter Academy in February 1954.

At the present we have a total school population of about 30 million; this is expected to reach 44 million by 1960. Today our college enrollment is approximately 2 million, and the colleges are faced with the problem of a considerable enlargement within the next ten years; yet we are faced with a growing shortage of teachers. The actual number of teachers trained for elementary and secondary school work has been declining over the past three or four years, with a further decline in view. Today our secondary education, particularly in the public school system, tends toward courses of vocational and life adjustment rather than those which comprise a liberal education. An example is cited of an applicant to the freshman class from a high school in a large Midwestern city. His courses for the junior year were English III, American History, Typing, Speech Chorus. Although his record was good and he had strong backing, needless to say he was not admitted to Yale.

Again there is the story of the French teacher in a public secondary school in an Eastern state who stated that she had just been called before the principal and confronted with a letter from the Superintendent of Schools which said:

Your French students have been doing better than the national average. This is not a good thing. Let us slow up.

To criticize students for doing better than the national average is a symptom of ill health and confusion of values undermining our whole structure of American education.

Why are such things as automobile driving, band music, chorus, et cetera equated with English, History, and Mathematics? Why are the basic subjects being sacrificed?

Frank B. Berry

FRANK B. BERRY, M.D.
Assistant Secretary of Defense
(Health and Medical)

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Foreword

The United States Armed Forces Medical Journal is the medium for dissemination of information from the medical profession to the medical profession. It is the official publication of the Department of Defense Medical Surge General's Office. It is the official publication of the Department of Defense Medical Surge General's Office. It is the official publication of the Department of Defense Medical Surge General's Office.

FRANK B. BERRY, M.D.

Assistant Secretary for Defense (Health and Medical Affairs)

MAJOR GENERAL SILAS B. HAYS

Surgeon General, United States Army

REAR ADMIRAL BARTHOLOMEW W. HOGAN

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UNITED STATES ARMED FORCES MEDICAL JOURNAL

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A STUDY OF HIATAL HERNIAS, USING PNEUMOPERITONEUM

WILBUR C BERRY *Colonel MC USA*

JOHN P HOLBROOK *Captain USAF (MC)*

EDWARD A LANGDON *Major MC USA*

CARLETON W MATHEWSON *MD*

ACCURATELY evaluating upper abdominal symptoms when there is radiologic evidence of a diaphragmatic hernia, is a perplexing clinical problem.¹ For several years after the advent of modern surgical technique, hiatal hernias were repaired in large numbers, frequently with no clinical improvement. This caused surgical repair to fall into some disrepute, with a number of clinicians and radiologists stating that radiologic evidence of a hiatus hernia was of no clinical significance in most cases.

During the past few years there has been a reawakening of interest in the problem. It is becoming clear that many persons have suffered from this condition living for years on ulcer diets or being considered essentially an emotional problem, after repeated studies revealed no organic lesion other than a hiatus hernia.² The concept that if most hiatus hernias observed roentgenographically are asymptomatic all are asymptomatic is not necessarily true. It is highly probable that a number of hiatus hernias do produce symptoms which frequently may be very distressing. The clinician must decide if the patient's complaints are due to a hiatus hernia diagnosed by roentgenography or to some other cause.

Symptoms due to an esophageal hiatus hernia frequently mimic those of a wide variety of upper abdominal and chest diseases.³ Methods to relieve the symptoms of hiatus hernia have been nearly as diversified as the symptoms themselves. The use of diets, antispasmodics, antacids and special sleeping arrangements have all given from fair to poor results in general. The most successful method is surgical repair of the hernia but the physician is hesitant to recommend this uncomfortable, slightly

hazardous form of therapy unless he is reasonably confident that the operation will relieve the symptoms. At this hospital a group has been investigating a procedure which may enable a physician to more accurately ascertain if the presenting symptoms are due to an esophageal hiatus hernia. Pneumoperitoneum has been used in approaching this problem patients whose symptoms were believed to be caused by hiatus hernia were selected after careful clinical and roentgenographic evaluation. The purpose of this study was to test the effect of pneumoperitoneum in patients in whom the clinical diagnosis was relatively well established. If intra abdominal air produced relief in a high percent of selected patients with symptomatic hiatus hernia it would be useful supporting evidence in cases in which a definite opinion could not be arrived at on other grounds.

Candidates for this study were questioned as to type of symptom, location, intensity and related conditions. Particular interest was paid to recurrent pain and regurgitation. Previous medical history such as diet, drugs and other methods to control pain were evaluated. These patients were then examined with esophagoscopy for esophagitis and herniated gastric mucosa to observe the action of the cardia. In patients with suspected hiatus hernia careful roentgenographic examination of the upper gastrointestinal tract was carried out to establish the diagnosis and to rule out the presence of other organic disease. During fluoroscopy several maneuvers were used to distinguish the type of herniation if one was found. Esophago-gastric junction was observed in the upright position and in the supine and prone Trendelenburg while the patient was drinking barium water mixture. Increased intra abdominal pressure was used to determine the presence of regurgitation. This finding was observed in the majority of these patients complaining of symptoms attributed to an esophageal hiatus hernia. Esophagograms were obtained on all patients and an attempt was made to evaluate the distal end of the esophagus, the type of herniation and the presence or absence of peptic esophagitis. Identical procedures were carried out on each patient following pneumoperitoneum and the examination was repeated after surgical repair of the herniation.

The preparation of the patients selected for pneumoperitoneum was extremely important. Each patient was informed as to the symptoms if any which might be produced by the air and asked to differentiate them from his previous complaints. Pneumoperitoneum was begun by injecting about 300 cc of air under pressure ranging from 20 to 40 cm of water into the abdominal cavity by means of an aroclor pneumo apparatus. Forty eight hours later a larger amount of air was injected in a similar manner the average volume being between 600 and 800 cc. The precise amount of

air injected on each occasion depended partly on the musculature of the abdomen, degree of relaxation, and discomfort produced. Forty eight hours following the second injection, between 750 and 1,000 cc of air was given intra abdominally, making a total of between 1 500 and 2,000 cc of air over a 4 day period. At this point the patient was asked to begin recording any changes in his symptoms. At three 5 day intervals thereafter about 750 cc of air was injected in order to maintain an average pressure in the abdomen of about 10 cm of water. During the 2 week period following the initial three injections of air, the patient's symptomatology was evaluated. The patient's hiatus hernia was then surgically repaired. These patients were observed postoperatively for from 3 months to 1 year. In the 10 patients who have been studied to date symptoms were improved with pneumoperitoneum in 9, in 4 the response was very dramatic. The procedure was not tolerated in the tenth patient. All 10 patients showed postoperative clinical improvement which closely correlated with the degree of improvement gained by the pneumoperitoneum. Three typical cases are described.

CASE REPORTS

Case 1 A 37 year old man had moderately severe recumbent distress unaffected by diet or drug except that spicy foods exaggerated his symptoms. A rather large esophageal hiatus hernia was noted by roentgenography. Esophagoscopy examination showed a moderate esophagitis. Over a 3 week period the patient was given 3 000 cc of air intra abdominally which gave complete relief. He was then operated on and during a 6-month postoperative follow up he has remained asymptomatic.

Case 2 A 55 year old man entered the hospital complaining of burning epigastric pain occurring postprandially and at night. He obtained moderate relief by assuming an upright position and walking about. The patient had a myocardial infarction several years previously and continued to suffer from angina pectoris. Over a 15 day period 2 300 cc of air were injected into the patient's abdomen. During this procedure the patient continued to have exertional angina but noted disappearance of postprandial and night epigastric burning pain. Operation was performed and the results in the 8 postoperative months have been good.

Case 3 A 28 year-old man suffered severe postprandial distress and had lived for 18 months almost entirely on milk. Repeated thorough evaluations of the patient's upper abdomen and chest revealed only a hiatus hernia. The patient had been considered a psychoneurotic prior to this study. Over a 3 week period 3 000 cc of air were injected into the abdomen producing complete relief of his symptoms. Physical results were also excellent and there has been no recurrence of symptoms a year postoperatively.



Figure 2 Roentgenogram of same patient as in figure 1 showing reduction of the hiatus hernia with pneumoperitoneum.



Figure 3 A sliding type of hiatus hernia visualized prior to pneumoperitoneum.

the Trendelenburg position the stomach herniated through the diaphragm just as was observed before the injection of air.

In conclusion it is believed that this method simulates reduction of the hernia anticipated by surgical repair, and that



Figure 4 Reduction of type but let in the right position with the mope on in. The mope lip usually du pla d the phago-
ga tract not due to red py

it might well be a useful technique for selecting patients who will benefit from surgical intervention.

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EXPERIENCES WITH THE ACUTE PHASE OF POLIOMYELITIS

A Clinical Study of 118 Cases

PAUL W. SHEFFLER *Captain MC USA*

ONE HUNDRED AND EIGHTEEN patients (service personnel and their dependents) with poliomyelitis were admitted to this hospital during the period from December 1953 through November 1954. A clinical analysis of the cases and an evaluation of the results of therapy in the 1953-1954 poliomyelitis epidemic in the Territory of Hawaii are presented here. The classification used here is a modification of that of Grulee¹ and Smith and associates.² The frequency of these cases by type of poliomyelitis is shown in table 1.

TABLE 1 *Frequency of the different forms of poliomyelitis*

Type	Number of cases	Percent
nonparalytic	39	33.1
Encephalitic	5	4.3
Bulbar	21	17.8
Spinal	53	44.8
Total	118	100.0

CLINICAL FEATURES

Signs and symptoms. All patients admitted in the acute phase of the disease had fever. The six predominant complaints listed in order of frequency, were headache, fever, muscle soreness, muscle weakness, symptoms of upper respiratory infection, and nausea and vomiting. Muscle weakness and/or muscle soreness occurred in 90 percent of the patients at some time during the acute phase of the illness. Urinary retention was present in 14 patients on admission. The duration of symptoms prior to hospital admission is summarized in table 2. About one half the patients were adults. The onset in the older patients appeared to be more insidious, the acute phase more prolonged, and the

From The Army Hospital, T. H. Capt. Sheffield is now assigned to U. S. Army Hospital, Fort Benjamin Harrison, Ind.

pain in the limbs and back more pronounced than in the younger age group. In the older age group the dromedary form characterized by two distinct bouts of fever was seen infrequently. There was little if any correlation between the length and severity of the initial symptoms and the final outcome of the disease. Many of the patients with nonparalytic poliomyelitis had prolonged

TABLE 2 Duration of symptoms prior to admission to hospital

Duration (days)	Number of patients
1 or less	15
2-4	66
5-7	23
8 or more	14

and severe initial symptoms while many of the patients with paralytic poliomyelitis had mild symptoms. In the average patient the fever lasted from 5 to 9 days. Here also there was no direct correlation between the degree of fever at the time of onset and the type or severity of the disease. Eleven patients (9 percent) had paralysis on the first day of fever. The onset of paralysis in one patient occurred on the first day after the temperature had returned to normal and on the second day in another.

Spinal fluid findings. Spinal fluid examinations were performed on all patients on admission or soon after. Ten cells or less per cubic millimeter in the spinal fluid were considered a normal finding. The spinal fluid cell count on admission ranged from 2 to 900 per cu mm (table 3). There were 11 patients who had a cell count of less than 10 on the initial examination. Of these three were clinically past the acute stage and all three had an elevated spinal fluid protein. Of the remaining eight patients seven had elevated cell counts on repeat examinations. There were 33 patients who had a cell count greater than 150 per cu mm. The spinal fluid protein value ranged between 15 and 170 mg per 100 ml (table 4). In five of our seven patients with a seroform of the disease the fluid on initial examination early in the acute phase of the disease revealed a high cell count and a high total protein concentration: i. e., a cell count greater than 100 per cu mm and a protein greater than 100 mg per 100 ml. This finding was not present in the remaining 111 patients. The cell count in relationship to the severity of the disease is summarized in table 3.

Age and sex. The largest number of cases comprising about 4 percent of all admitted patients as in the 1 to 10 year old group (table 5). The youngest patient was 3 months of age and

the oldest was a 50 year old man (A detailed breakdown by age is presented in table 5) The ratio by sex was 3 to 2, with males predominating

TABLE 3 *Spinal fluid cell count in relationship to severity of poliomyelitis*

Type of poliomyelitis	Cell count per cubic millimeters				
	Less than 10	10 50	51 150	151 300	301 900
Nonparalytic	1	13	14	10	1
Spinal					
Mild	1	10	13	6	1
Moderate		4	4	5	3
Severe			2	4	
Bulbar-encephalitic	2	8	13	3	
Total	4	35	46	28	5

TABLE 4 *Spinal fluid protein in patients with acute poliomyelitis*

Spinal fluid prot in (mg per 100 ml)	15 40	41 80	81 120
Number of patient	57	53	8

TABLE 5 *Age group of patients with poliomyelitis*

Age group (year)	Number of patient
Under 1	6
1-5	29
6-10	20
11-15	3
16-20	7
21-30	36
31-40	16
Over 40	1

Seasonal incidence The peak incidence of poliomyelitis in the Territory of Hawaii has varied from year to year but has usually occurred in the spring months. In the 1953-1954 epidemic the peak was in March (table 6). From our small series it appeared that the virulence of the disease was greatest early in the epidemic. The majority of our severe and moderately severe

cases occurred in the first 19 weeks of the epidemic. In December 1953 there were 12 patients admitted with acute poliomyelitis. Of these two had respiratory paralysis and in four others the disease was of moderate severity. The extent of involvement in the patients admitted in January and February 1954 was similar to that in those admitted in December. By March 1954 the virulence of the disease was decreasing and 11 of the paralytic patients had mild involvement.

TABLE 6 Incidence of poliomyelitis by month

Month	Cases		Total
	Paralytic	Nonparalytic	
December 1953	10	2	12
January 1954	11	4	15
February	12	2	14
March	19	2	21
April	5	2	7
May	7	1	8
June	9		16
July		8	10
August	1	5	6
September	1	3	4
October	1	2	3
November	1	1	2
Total	9	39	118

Deaths. There were two deaths in the group of 118 patients. Considering only the 79 paralytic cases the fatality rate was 2.5 percent. If we consider only the 14 respiratory cases the mortality rate was 14.3 percent. The two patients who died were 29 and 31 years of age respectively. Both had severe bulbar spinal type poliomyelitis.

MANAGEMENT

The following is a resume of the therapeutic regimen at this hospital during the 1954 epidemic.

Nonparalytic poliomyelitis cases. These patients were treated with bed rest, standard hospital diet, and hot packs for relief of muscle pain and spasm two to four times daily. The constipated patients were given milk of magnesia and enemas every other day as required. In addition they received daily physiotherapy. Five days after the patients became afebrile they were transferred to the orthopedic service for further evaluation.

Spinal poliomyelitis cases The patients with spinal poliomyelitis were treated similarly to those with the nonparalytic form of the disease. Urinary retention, if present, was treated by the use of an indwelling catheter and irrigations with potassium permanganate solutions three or four times daily. The indwelling catheter was removed in 3 to 4 days, and usually recatheterization was not necessary. Prophylactic antibiotics were given while the catheter was in place. Hot packs gave relief of muscle pain and spasm in the majority of patients. Aspirin occasionally helped the remainder. Foot drop was corrected by the use of a footboard.

Bulbar poliomyelitis cases Patients with mild bulbar poliomyelitis were treated much the same as the patients with the nonparalytic form of the disease except that their diet was of a liquid nature. If they had difficulty in swallowing, they were given about 2 000 ml of fluids intravenously daily until their temperature returned to normal, when nasal gavage was begun. Initially, the feedings were small, consisting of only 2 or 3 ounces of fluid. The amount was gradually increased over a period of several days to the point where the patient was receiving from 10 to 12 ounces every 4 hours. These gavage feedings contained about 1 caloric per ml. If respiratory difficulty was present, a tracheotomy was performed and the patient was placed in a respirator. The patients with respiratory difficulty were given penicillin or, if allergic to penicillin, erythromycin and streptomycin combinations.

Poliomyelitis patients with respiratory muscle paralysis A number of simple clinical tests were used to determine presence of breathing difficulty. The length of time the patient could hold his breath or the duration of phonation was a rough index of the momentary reserve. Ability to cough proved a good index of function of the laryngeal, diaphragmatic, and abdominal muscles. The vital capacity measurement was also useful.² It was our practice to consider a patient with weakness of the respiratory muscles in need of artificial respiration if the vital capacity dropped to 25 percent of the predicted normal. If the patient had appreciable impairment of the diaphragm, used the accessory muscles for breathing, or complained of air hunger, and there were other symptoms of exhaustion, vital capacity readings above 25 percent did not contraindicate the use of respiratory aids. After an elective tracheotomy was performed, the patient was placed in the tank respirator and he became a nursing problem under close medical supervision. Tracheotomies were performed in 13 of the 14 respirator patients as an elective procedure. The fourteenth patient was an emergency case because of the ad

vanced respiratory distress on admission. The respiratory rate and the negative pressure maintained in the respirator were such as to produce the required tidal volume as predicted for the patient. For the average adult the rate was set at 16 to 18 cycles per minute and the negative pressure was maintained at -15 to -17 cm of water. Particular attention was given to thorough training of the nurses and the hospital attendants in the correct procedures of caring for patients in respirators. In both training and practical application emphasis was placed on maintenance of an adequate airway, gentle removal of secretions in the trachea by suction, maintenance of correct pressures within the respirator, and emergency techniques for manual operation in the event of a power failure.

During the febrile stage the patients received adequate fluids intravenously. When they were afebrile they were given a high calorie diet with vitamin supplements. Penicillin was administered daily and streptomycin was given twice weekly. Hot packs were used to relieve muscle spasm and pain unless the rectal temperature was greater than 100° F. Gastric dilatation was watched for and treated with a stomach tube as the condition presented itself. Pressure ulcers were prevented by the frequent turning of the patient.

The patients were routinely coughed three to four times daily within the respirator. A negative pressure of from 35 to 40 cm of water for adults and from 25 to 30 cm of water for children was obtained by inserting a vacuum hose from a tank type vacuum cleaner into a porthole. When the desired negative pressure was obtained the bedpan port was rapidly opened and allowed to remain open for another complete cycle. The procedure was repeated for six coughs after which the patient was allowed to rest for 5 minutes. The series of coughs were repeated three times three to four times daily. If there was evidence of atelectasis or pneumonia the patient was given aerosol therapy using Alevair (brand of a detergent euperinone) (brand of crystalline trypsin) prior to the coughing procedure. During the short rest periods between the series of coughs secretions were removed through the tracheotomy tube with the usual aspiration apparatus and a No. 10 French urinary catheter.

After the patient became afebrile he was removed from the respirator for short periods by using the Bennett portable intermittent positive pressure machine. The respirations were carried on by manually tripping the machine 16 to 18 times a minute under a positive pressure of 16 to 18 cm of water. The use of the Bennett portable intermittent positive pressure machine greatly facilitated the removal of the patient from the respirator for nursing care and positional change. Adequate minute volume was maintained during this procedure.

Muscle tonus and vital capacity were checked periodically. After the patient was afebrile and the vital capacity had improved to about 30 percent of the predicted normal he was removed from the respirator for short periods, once or twice daily gradually increasing the time out of the respirator. He remained in the respirator for sleeping at night until he tolerated at least 6 hours continuously out of the respirator during the day. If he was still unable to cough he was returned to the respirator temporarily for the procedure. It was noted that when the vital capacity reached about 50 percent of the predicted normal the coughing strength was usually sufficient to clear the tracheobronchial tree. After the patient had been weaned from the respirator and could cough satisfactorily, the tracheotomy tube was removed. Prior to removal however the tube was plugged for from 5 to 7 days to check for difficulty in handling secretions.

DISCUSSION

All six of our patients under 1 year of age had paralysis on admission. The diagnosis was confirmed by spinal fluid examination. There were undoubtedly many cases of nonparalytic poliomyelitis missed in children under 2 years of age.

The frequency of nonparalytic poliomyelitis was highest in the younger age groups constituting 37 percent of all cases of poliomyelitis in the 1 to 10-year group and 40 percent in the 11 to 20-year group whereas it was 25 percent in the 31 to 40-year group and 30 percent in the 21 to 31 year group.

The Hawaiian peak incidence in the spring rather than late summer as occurs in the mainland may have been due to the mild weather experienced here throughout the year.

The decision as to whether or not exhaustion due to respiratory impairment exists in a given patient was at times controversial. However, in the patients with respiratory muscle paralysis it was thought safer to err on the side of using artificial respiration early. This avoided sudden adverse changes in the patient's condition due to impairment of the airway, rapid progression of weakness of the muscles of respiration, or decrease in the functioning lung tissue because of atelectasis and pneumonia. Clatterer² recently listed the criteria for the clinical determination of types of breathing difficulty.

There have been considerable differences of opinion as to the indications for tracheotomy.^{2,3} It was our practice to do tracheotomies in those patients that showed progression of the bulbar signs plus respiratory inadequacy as well as where there was obvious impairment of the airway by paralysis and accumulation of secretions.

There were 26 cases of the bulbar encephalitic type of poliomyelitis of which 7 were very severe and 6 moderately severe.

It was our thought that the mortality was reduced by placing these patients in a respirator as soon as indicated. Tracheotomy was performed as an elective procedure thus avoiding the necessity of an emergency operation. When severe ventilatory failure is present the emergency tracheotomy is technically difficult. We believed that the tracheotomy tubes provided a better means of removing the secretions and that they facilitated the use of the combined respiratory pressures. The use of the positive pressure early in the disease helped prevent pneumonia and atelectasis especially in the more severely involved cases. Although the Bennett intermittent positive pressure apparatus could be used with a mask it was more fatiguing to the patient and heightened his apprehension more than when the intermittent positive pressure was used through the tracheotomy tube.

We found that the frequency of negative spinal fluid findings was lower than that reported in most series of cases.⁷ This may have been due to the repeated examination because the percentage of normal spinal fluids on the initial examination was similar to that in other series.

SUMMARY

Of 118 cases of poliomyelitis involving military personnel and dependents during the 1954 epidemic in Hawaii 33 percent were nonparalytic 99 percent were bulbar encephalitic and 45 percent were spinal. The over all mortality rate was 1.7 percent.

This series was similar to others reported except for the seasonal incidence and spinal fluid findings. About 7 percent of the patients showed no pleocytosis or increased spinal fluid protein on admission; however this was decreased to less than 1 percent on repeated spinal fluid examinations.

The length or severity of the prodromal symptoms had no bearing on the final outcome of the disease and the virulence of the disease was greatest early in the epidemic.

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MANAGEMENT OF PSYCHIATRIC PROBLEMS BY THE DISPENSARY PHYSICIAN

SHELDON T SELESNICK *First Lieutenant MC USAR*

THE BELIEF that we create problems by exploring the psychologic reactions of our emotionally disturbed patients is like ascribing the cause of a fever to the thermometer.¹ Further, to avoid a psychiatric problem when it exists is to fail to take the temperature of a patient because we fear we will be unable to cope with his fever.

Modern medicine is dedicated to the ultimate goal of alleviating discomfort. With the exception of the antibiotics, there are few, if any, medicines that effect a complete cure. Even with surgical removal of diseased parts, there is not complete restoration to anatomic normality. Despite the presence of the residual abnormality (scar tissue) the practitioner is satisfied when functional homeostasis is obtained. Too often when we are confronted with psychiatric problems we rationalize our frustrations over the failure to initiate a channelization of a therapeutic regimen by referring the patient to a specialist for the "cure." Psychiatric medicine however is also geared to diminishing discomfort, with few opportunities for eliciting a complete cure. We cannot dispel our frustrations by rationalizing that psychiatric problems are infrequent. Indeed, it has been variously estimated that from 40 to 80 percent of patients seen by the general physician are suffering from symptoms directly related to emotional problems.^{2,3} In view of the shortage of psychiatrists, the first-echelon physician has the responsibility of recognizing and managing these problems, which are real and frequent.

The need therefore arises to consider how best to use the armamentarium at the disposal of the general medical officer. The purpose of this article is to aid the dispensary physician (1) in deciding which patients he can and should handle (2) in planning a program for the management of these patients (3) in deciding which patients should be referred (and to whom) and (4) in preparing patients for referral to a psychiatrist. By necessity the depth and the scope of this discussion is limited.

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it does not deal with research and makes no attempt to teach psychotherapy or discuss in detail the problems of individual patients. The suggestions made are general and it will be noted that some are inapplicable to combat situations.

For convenience this article is organized around the following diagnostic categories: (1) Schizophrenia and depressions (the two most frequently seen and perhaps most confusing of the severe mental illnesses), (2) psychoneuroses and (3) character and behavior disorders.

SCHIZOPHRENIA AND DEPRESSIONS

Schizophrenia It is a simple diagnostic task to recognize an overt schizophrenic reaction with classical symptoms such as hallucinations, delusions, illusions, stereotypy, short attention span, circumstantiality and irrelevancy of speech, bizarre ideation, feelings of unreality and complete intellectual dysfunction. It is more difficult, however, and just as important to recognize the incipient or early schizophrenic. The schizophrenic process is a disease characterized early by the withdrawal of emotional life from reality. It is only later in this continuum that the intellectual dysfunctions and thinking disorders become clinically prominent. The schizophrenic is ever trying to diminish his discomfort by reducing emotional contact with the people who he believes have hurt him. The schizophrenic has feelings and emotions but they are expressed inappropriately, symbolically (gestures, grimaces, posturing) or suppressed entirely (apathetic and blunted affect). By consulting members of the man's unit we can learn something of his emotional reaction to others. But right before us we have an index as to how the soldier reacts emotionally. How does this patient respond to the interviewer? How does he react to humor? Are his verbalizations incompatible with the emotional tones expressed? Does he appear to be at the same emotional level at all times, apparently expressing a paucity of emotion? Although schizophrenia is a syndrome, the affective reaction of the patient is the most important single characteristic. It should be noted, however, that cultural differences between patient and physician should be considered (e.g., a Caucasian northern born physician may misunderstand the emotional reactions of a southern born Negro; an American born physician may misinterpret the reactions of a foreign-born patient). Talking with a conferee of the patient who is in his unit and of similar cultural origin often mitigates this confusion.

Depressions Patients are often referred to the psychiatrist for depression when in fact they feel blue or unhappy. Psychiatrically, depression implies that the patient is seriously ill and must be considered a possible suicide risk. The differ-

ence between the symptom complex presented by the neurotic and that of the psychotic depressive is a quantitative one. However the neurotic depressive may be conscious of a recent traumatic event the psychotic not so. A severe neurotic depression may develop into a psychotic one. Some of the features which suggest depression are initially vague somatic complaints, especially constipation, insomnia, anorexia, restlessness, impotence, and the inability to cry. Psycho-motor retardation and feelings of severe remorse, self reproach and guilt are cardinal symptoms. Often after an interview with this type of patient the feelings of hopelessness of the patient may be felt by the physician so that he too feels dejected.

Any patient showing affective signs or symptoms of an incipient or full blown schizophrenic reaction or of a severe depression should be referred to the psychiatrist for further evaluation.

PSYCHONEUROSIS

Grinker² has stated "Psychoneuroses are the result of conflicts between opposing inner psychological forces or between certain drives within man and his restricting, frustrating or punitive environment." Whether the environment is in actuality threatening or is only perceived as such by the psychoneurotic person often determines the course of management. What may appear to be a neurotic problem can, in reality, be a situational one. Or the psychoneurotic person can actually be in a threatening environment. In both cases environmental manipulation should be attempted. If he perceives the environment as dangerous when it is not so, psychotherapy is the treatment of choice. The avenues of relieving external stress are discussed later.

The physician can use psychotherapeutic techniques to minimize the internalized conflicts of his patients. However, before the physician can successfully undertake psychotherapeutic approaches he must first understand that "the therapeutic results of labeling a man a 'goldbrick' are harmful." An attitude of impatience or disgust always delays and sometimes prevents adequate treatment. Of paramount importance to successful psychotherapy is a good relationship between patient and physician. The fact that the latter is an officer has its advantages in establishing confidence but it also can be a disadvantage depending on how it is used. Authoritative acceptance has a positive effect, authoritarian control has a negative one. The physician must have a sincere desire to help, sympathy for the patient and his problem, and an appreciation of the positive personality characteristics of the man entrusted to his care. At the same time he must have introspected sufficiently so as not to impute his own feelings to the patient. Objectivity is

important Whitehorn suggested that the therapist consult another physician not necessarily a psychiatrist so that objective orientation may be maintained. The consulting physician may point out when the therapist or the patient appears to be resisting therapy and when mistakes of over identification are made. The consultant with objectivity twice removed often has other interpretations to offer which can be of value. A psychiatric authority has expressed another basic qualification of the therapist namely the ability to listen. It is the person with the problems (presumably the patient!) who has the need to talk.

Initially the physician must approach the patient with the attitude of how can I alleviate the prevailing discomfort and thus establish and limit his goals of therapy. For example a soldier had minor personality problems but functioned adequately until he had an acute episode of anxiety. Exploration revealed that the soldier recently had a sexual experience about which he felt extreme guilt. The physician in this case set for himself the goal of relieving the man's feelings of guilt and when this was accomplished the patient's anxiety was diminished. The dispensary physician helped this soldier achieve psychological and functional homeostasis without "curing" his patient of all his problems.

In the management of psychiatric problems the physician as he would in any field of medicine must familiarize himself with basic therapeutic approaches. Levine's book on psychotherapy in medical practice is especially noteworthy. Some of the more commonly applied psychotherapeutic approaches which are often used in combination are:

1 *Explanative* This approach often relieves the fear of the patient that he is suffering from a severe or incurable illness. In addition it assures the patient that the doctor is interested and does not consider the symptoms imaginary.

2 *Supportive* Those techniques are aimed at encouraging the patient by pointing out his accomplishments and potentialities. *Reassurance* is a supportive technique whereby a patient's confidence is restored by pointing out forms of satisfactions in his past life whereas *suggestion* aids the patient in discovering new areas of satisfaction. Accepting the patient while he ventilates pent up hostile feelings is another form of support. This technique has the additional benefit of helping the patient formulate the advantages and disadvantages of certain decisions without direct advice from the physician.

Case 1. A soldier became severely grieved shortly after his girlfriend moved from his state. Prior to this he had felt that he was ugly, stupid and disliked. The removal of the mole focused his

tivity onto his face. The patient ventilated freely his resentment of his father who regarded him as dumb and worthless. While accepting the patient's hostile feelings the therapist pointed out the soldier's success as an athlete in high school and reassured him that he was at least average in appearance and intelligence. The patient was encouraged to continue his college correspondence courses. During the course of the treatment the patient began dating and new areas of satisfaction increased his feelings of security.

3 *Deeper forms of therapy* (uncovering, interpretative, et cetera) unlike the explanative and supportive types, attempt to uncover unconscious problems, destroy inadequate defenses, and rebuild new mechanisms of defense. This therapy which often involves exploration of early childhood, dream analysis and free association techniques is usually the task of the specialist. However occasional interpretations that are understood by the patient and the physician and that do not mobilize anxiety may reveal insights and thus be constructive.

It is not within the scope of this article to discuss somatic manifestations of neurotic problems. Psychosomatic medicine basically "concerns itself with the psychologic approach to general medicine." "It is both a special field and an integral part of every medical specialty." * Alexander's¹¹ book is highly instructive concerning the meaningful function of somatic symptoms. It discusses at length the modern concepts of such psychosomatic illnesses as peptic ulcer, hypertension, hyperthyroidism, asthma, ulcerative colitis, et cetera.

It is a well known fact that the process of referring a mildly psychoneurotic patient to a psychiatrist may result in the eventual fixation of symptoms.¹² In the time lag between referral and consultation the patient may come to feel that he is "crazy" or "mysteriously" ill. In general, any one of the following situations is an indication for referring a psychoneurotic patient to a psychiatrist: (1) When the patient has symptoms which have been intractable to ordinary forms of medical management and psychotherapeutic approaches; (2) where the neurotic problem is well established, and the patient is functioning inadequately and appears motivated for more intensive forms of treatment; (3) when the problem is severe enough for special care (e.g. hospitalization); and (4) when the dispensary physician believes that the dynamics of the problem are too obscure for him to understand.

Case 2. A 23 year-old soldier was referred to a psychiatrist from the medical inpatient service because of a midepigastric pain episodic in nature which had persisted for 8 weeks and which necessitated hospitalization (intractable severe special care necessary—see (1) and (3)). Routine medical studies failed to reveal an organic basis

for the disturbance. Explorative and supportive therapy were to no avail. Repressed hostility toward parent figure and past history of peptic ulcer and asthma suggested rather chronic well established neuritic pattern. This patient was well selected for referral to the psychiatrist for exploration of possible unconscious dynamics. The patient had been married 6 months. His wife had written letters in which she told of her pregnancy and complained of cramping sensation in the abdomen. The patient readily discussed his identification with his wife and her symptoms. He was able to accept the interpretation that his symptomatology was related to hers. In discussing his dreams he noted that his wife was always present but never pregnant. Hostility to the unborn child (who would divert his wife's attention from the patient) was not taken up directly in therapy. A program was arranged with the medical department whereby the patient could subliminally repress his stilted feelings through physical therapy. Further psychiatric interview revealed that the patient gradually became free of his pigabstric distress.

CHARACTER AND BEHAVIOR DISORDERS

The Joint Armed Forces Nomenclature pamphlet which lists differentiates and describes psychiatric conditions as found in the service defines character and behavior disorders as characterized by developmental defects or pathological trends in the personality structure with minimal subjective anxiety and little or no signs of distress. In most instances the disorder is manifested by a lifelong pattern of action or behavior (acting out) rather than by mental or emotional symptoms. It is often difficult to clearly distinguish between neuroticlike behavior in the character behavior disorder and psychoneurosis, psychosis or situational/maladjustment. A thorough social history contributes to making distinctions.

The history of the patient with a character and behavior disorder as distinguished from that of the neurotic person, primarily shows continuous difficulty in making a sustained adjustment. In addition he appears to be unable to profit from experience. Positive personality features and average or superior intelligence may aid in good initial adjustment. The distinction between a patient with a mild character and behavior disorder (e.g. a passive and/or dependent person) and a neurotic person is not important because results from brief psychotherapy can be extremely helpful for the patient with mild character disorder and gratifying for the physician. It is only when the character behavior disorders are severe that distinction is pragmatic (the management of these cases is discussed later).

A past history of severe maladjustment may indicate that the soldier has had previous psychotic episodes. Questions should be asked concerning past hospitalization and such treatment

as electroshock and insulin shock. However, even though the patient may not give a history of past psychosis "it is quite likely that the pre-existing psychopathy (character and behavior disorder) may facilitate the development of some of the mental diseases."¹⁵ Therefore, an examination of the patient's mental status is in order to rule out the existence of a present psychotic illness, even in the presence of a history compatible with a character behavior disorder.

The person suffering from a situational maladjustment, unlike one with a character behavior disorder, has difficulty adjusting to newly experienced environmental factors or to especially trying and difficult situations with no evidence, however, of any serious long standing or underlying personality defects or chronic neurotic patterns.¹⁶ Anxiety, alcoholism, asthenia, poor efficiency, or low morale may be manifestations. It should be noted that, if unrelieved, these reactions can result in psychoneurotic or psychopathic like reactions.¹⁷ The management of these situations involves working with the environment (manipulation) or directly with the patient (morale building).

Our first consideration here is environmental manipulation. As the mental health adviser, the dispensary physician is justified in exploring a patient's interpersonal difficulties within his unit which may have resulted in psychologic discomfort to his patient. The man's company commander or his first sergeant can be interviewed to ascertain if interpersonal conflicts can be relieved. If, through discussions, it is not possible to solve interpersonal problems, and the physician believes that the man can make a better adjustment in a new job or a new unit, the physician should certainly make such recommendations.^{16, 17}

Some problems of morale also may be classified as manageable through environmental manipulation. The tensions may not be due to problems within the unit, but may be caused by concern over family matters "back home." The soldier should be informed of Red Cross facilities for finding out facts about the home situation. Morale leave or compassionate transfer may be indicated. Such soldiers should be referred to the chaplain, not to the psychiatrist whose primary function is the diagnosis and treatment of mental illnesses.

There are some soldiers who are in need of morale building and moral support, e.g. the recruit who says, "The Army is not doing anything for me." It can be pointed out, sympathetically albeit realistically, to this man that the Army is not supposed to do anything for him, and that his presence in the Army is in fulfillment of an obligation to his government. It can be emphasized that if his experience in the Army is to be of benefit to him he must take the initiative in exploring educational and

entertainment facilities as well as those of special services. The chaplain often gives invaluable aid to the soldier who is in need of morale building group or religious activities or help with certain marital problems.

The psychotherapeutic management of patients with more severe character behavior disorders is a difficult task. Any of the therapeutic techniques previously discussed may be attempted with ventilation being perhaps the most effective. Certainly this in itself is not remedial but ventilation often results in relief from anxiety and resentment and lessens the need to act out emotional conflicts in a socially undesirable manner. However it is in treating the patients with a severe character behavior disorder that supportive psychotherapeutic approaches most often need to be combined with environmental manipulation.

Case 3. A 40 year old alcoholic who had been in the service for 14 years was sent to the psychiatrist for cure of his alcoholism. It was brought out in the initial interview that this man was in a line of company with soldiers 15 to 20 years his junior. He continually offered blows to his self esteem when the younger men referred to him as "Dad" or the "old man". In a case such as this where alcoholism is a habit pattern developed over the years the only realistic approach is to relieve if possible the stressful conditions so that alcoholic intake may be diminished. A transfer to a less threatening environment was recommended. This case illustrates the need for a kind of non-moral manipulation that can be better evaluated by the physician in the dispensary because of his close proximity to the problem.

Psychiatric referral of the patient with character and behavior disorder is indicated when the dispensary physician has been unsuccessful in the management thereof yet believes that the patient is motivated for treatment and that more experienced handling may be beneficial. If the possibilities of management (intrinsic and extrinsic) have been explored and the physician is of the opinion that the soldier will not respond to further efforts but instead is likely to be more threatened (and as a result a more severe problem to the Army) administrative separation should be recommended. Patients who have acted out repeatedly in an asocial or antisocial manner and appear to be heading for disciplinary actions can be released from the service under the provisions of Army Regulation 615-368 (unfitness). Soldiers who despite efforts at reclassification and reassignment appear unable to adapt but who have not been severe problems are released administratively under the provisions of Army Regulation 635-909 (unsuitability or inaptitude). When these conditions prevail the dispensary physician has the authorization and should take the responsibility for writing a certificate recommending administrative separation. He should include in the

statement that (1) the patient is able to distinguish right from wrong and to adhere to the right (2) he possesses sufficient mental capacity to understand the nature of any proceedings against him, and intelligently to conduct or co-operate in his defense, and (3) there is no mental or physical disability present that is sufficient to warrant separation from the military service through medical channels " 20 It is not absolutely necessary for the physician to indicate whether the man should be separated under Army Regulation 615 368 or Army Regulation 635 209. It will suffice merely to recommend administrative separation under appropriate provisions " The relationship between the dispensary physician and the company commander certainly is enhanced when the medical officer takes this responsibility without referring it to a psychiatrist who actually has less knowledge of the factors at hand

PREPARATION FOR THE REFERRAL

As important as the recognition of the need for referral to the psychiatrist is the preparation of the patient for the referral. Before the referral is made, the physician must understand that personal motives may affect the reason for his decision. Hostile rejection of the patient who has mobilized the physician's anxiety may result in a punitive measure, which finds outlet through a psychiatric referral. An aid to the physician in understanding his own motives is writing out questions on the consultation sheet that he desires to have answered e g a question of differential diagnosis, a question of whether or not supportive techniques are sufficient to alleviate the patient's presenting complaints, and other questions referring to the management and disposition of the given problem. The way in which the preparation is handled has a significant effect upon the attitude with which the patient comes (or refuses to come) to the psychiatrist as well as upon the illness itself. The implicit or explicit use of such terms as "psycho" "schizophrenic" "crazy," or "shock treatment" carries serious adverse emotional impacts. A surreptitiously arranged referral will destroy the confidence of the patient in both physicians. An attempt to conceal the identity and the purpose of the consultant by referring to him as a "nerve doctor" rather than as a psychiatrist "serves to reinforce the patient's need to believe that his illness is organic and has no connection with his inner personal self or his intimate feeling toward significant people in his life " 21 At the same time, efforts should be made not to overrate the coming interview by promising the patient a cure.

The referral should be handled in a simple, honest, direct fashion, indicating that the psychiatrist is an accepted, respectable physician as is any other specialist. No embarrassment need be attached to the fact that the physician thinks that the

patient has emotional problems Bond and Flumerfelt² suggested beginning in this manner "I think the symptoms you have may be very largely related to some of your problems and I think you should go to someone who is more familiar with dealing with such things than I am. A brief explanation of how people react physiologically to conditions of emotional stress should be made (e.g. the somatic manifestations of fear). The fact that the referring physician is concerned about the patient's symptoms helps dispel the doubt that 'it's all in your mind or just psychological.'" The patient should be prepared for the fact that in order for the consulting physician to understand his emotional feelings intimate and personal questions will be asked. The referring physician can leave the patient with the final feeling that should he not be treated by the psychiatrist for any reason he is not a forgotten case but can return to the referring physician for help following the psychiatric consultation.

SUMMARY

As a general practitioner the dispensary physician has the right and the obligation to allay discomfort in his psychiatric patients. The prevalence of psychiatric problems and the shortage of psychiatrists obviate any other course. The psychiatric patient presents a confused clinical picture and the channelization of a therapeutic regimen is often obscure. This article attempts to offer suggestions for the diagnosis management and referral of psychiatric patients. The psychotherapeutic and environmental manipulative devices existing in the general medical officer's armamentarium are explored.

It is important to evaluate the affective reactions of the early schizophrenics. Unit contacts and the patient's reaction during the interview aid in this evaluation. Psychiatrically depressed patients who are serious suicidal possibilities display various degrees of some symptoms which are listed. Explanative supportive and interpretative approaches although superficial may be helpful to some neurotic patients.

Persons who are suffering from certain situational difficulties may be helped through the Red Cross, the chaplain and morale building interviews or through the development of better relations with men in their unit. Patients with mild character and behavior disorders may be approached psychotherapeutically the same as a neurotic person. When soldiers with severe character and behavior disorders appear to be heading for increasing difficulties the first echelon practitioner should take the initiative and recommend administrative discharge.

Psychotics depressives or patients suffering from psychoneurotic disorders which are intractable chronic or severe

should be seen by the psychiatrist, nor should any other patient whose problem appears too complex to be approached through ordinary methods. Finally, as important as the actual psychotherapy of patients by the dispensary physician is the preparation of other patients who are to be referred to the psychiatrist. Simple, frank, and direct explanation of the need for this referral is recommended.

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DIAGNOSTIC RADIOGRAPHY WITH RADIOACTIVE ISOTOPES

JOHN B STORER *Cpt MC USAF*
ADOLPH T KREBS *Pb D*

MOBILITY is basic to modern concepts of warfare. Because of the emphasis on mobility under field conditions the medical service must frequently sacrifice certain equipment which is taken for granted in permanent military or civilian hospitals. Diagnostic x-ray facilities, for example, are usually available only in rear areas because the equipment is heavy, relatively fragile, and requires specialized supporting facilities such as electric power sources, darkrooms, et cetera.

A lightweight, rugged, completely portable radiography unit which would operate independently of sources of power and specialized equipment offers obvious advantages for military and civilian disaster usage. Localization of metallic foreign bodies such as shell fragments, the diagnosis of fractures, and the less dramatic but equally valuable application to patients observed at medical and dental sick calls are a few obvious uses for such a unit.

Over the past 2 years the Army Medical Research Laboratory has devoted considerable effort to the development of a practical, completely mobile diagnostic x-ray unit. A workable model which weighs less than 50 pounds and which will operate under field conditions without specialized equipment has now been developed. Because the radiation is emitted by a radioactive isotopic source, no electrical generators, wiring circuits, or control panels are required. The radiographic films may be developed in a self-contained cassette or film holder and no solutions, water, or darkroom are required.

There are two mechanisms by which the impingement of electrons on the target material produces x-rays. The first mechanism is by the production of what is known as characteristic x-rays. Normally the atom is in a stable state. If one of the high energy electrons from the electric discharge across the vacuum tube crashes into the stable configuration of the atom, there is a certain low probability that it will eject one of the satellite electrons from its orbit by collision (probably interference with the

electric field) When such an ejection of an electron occurs the atom has an unstable configuration. If the electron was removed from one of the inner orbits its place will be taken immediately by an electron from an outer orbit which moves in to replace it. In moving in, however, this electron goes from a higher to a lower energy state. By the laws of conservation of energy the difference in energy cannot be lost and in this case it is emitted as an electromagnetic radiation of proper wave length to be classified as an x ray. In other words the energy of the x rays are a characteristic of the target and are therefore called "characteristic x rays".

The second mechanism of x ray production results from *bremstrahlung* or "braking radiation". In this case the incident electrons on entering the electrical field of the target atoms, are slowed down and eventually stopped without necessarily "knocking out" any orbital electrons. These fast-moving incident electrons have considerable energy which must be given up in being brought to a stop. This energy may appear as heat, light or as x rays. Because the electrons do not all have the same initial energy, do not all enter the electrical field of the target atoms in the same way and are not all decelerated in the same manner, the resulting radiations show a wide variation in energy from very low to very high with the maximum being limited by the energy of the incident electrons.

The higher the energy of x rays the greater is their penetrating ability. Energy is usually expressed in thousands of electron volts (kev) or millions of electron volts (mev). X rays with an energy of several hundred kev are able to penetrate a considerable thickness of steel and are frequently used in industry for the radiographic study of castings, welds, etc. Such highly energetic radiation is entirely unsuitable for medical diagnostic use, although it is of value in radiation therapy. Medical radiography is dependent on the fact that when x rays of suitable energy are made incident on a body part there is a differential degree of absorption of radiation by various structures which is related to the density of the structure. If the energy of the radiation is too high then it is almost equally penetrating for all tissue structures and no contrast is obtained on the radiographic film. If the energy is too low it does not penetrate tissue sufficiently to be of practical value. For most diagnostic work x rays ranging in energy from about 30 to 100 kev are used. The first criterion then for useful diagnostic x rays is that their energy lies somewhere in the range of 30 to 100 kev.

The image cast by a structure on a film is somewhat analogous to the shadow cast by an object in front of a light. If a point source is used as a light source then the shadow has clearly defined margins. If a diffuse source of light, such as a bank of lights, is used then the shadow has indistinct margins.

hulhs is used then the shadow is poorly defined and has blurred margins. A similar situation holds for radiography. When the radiation source approximates a point (small focal spot) good definition is obtained on the film or fluoroscopic screen. When the radiation is emitted from a large area the definition is poor. It follows therefore that the second criterion for a useful diagnostic radiation source is that the radiation be emitted from an area which approximates a point. The third criterion for a good source is that a sufficient number of x rays be emitted per unit time and that the total exposure time for taking a radiograph be reasonably short.

PRINCIPLES OF ISOTOPIC RADIOGRAPHY

It can be surmised that even with refinements conventional x ray equipment is likely to remain heavy, relatively fragile, and dependent on sources of electrical power for its operation. All these factors tend to limit mobility. If a source of radiation were available which fulfilled the above criteria for useful radiography but which did not have the objectionable features of x ray machines with respect to mobility, then a practical radiographic apparatus for use in advanced field units could be developed. Such radiation sources are available in the form of radioactive isotopes.

With the great advances made in the field of atomic energy in the past dozen years, a large number of radioactive materials which emit radiation very similar to that obtainable with x ray machines are now available. Not all these isotopes emit their radiation by the same basic physical mechanism. Variations in mechanism and type of radiation emitted must be considered in the selection of promising isotopes and in the design of radiation units. The isotopes of particular interest for use in radiography may be listed in four categories:

1. *Gamma ray-emitting isotopes*. Gamma rays like x rays are electromagnetic radiations of short wave length. They are identical to x rays in physical characteristics and effects on tissues and differ only in their origin. Whereas x rays arise from transition of orbital electrons of an atom or by *bremstrahlung*, gamma rays are emitted from the nucleus itself. Certain isotopes emit either or both types of radiation. When an atom nucleus is made unstable (by neutron bombardment in the case of most artificial isotopes) it may return to a stable state by emission of one or more of its component particles (beta or alpha particles). In so doing it goes to a so-called excited state (higher energy level). It then may return to a normal energy state (ground state) by the emission of energy in the form of one or more gamma rays. While most of the gamma emitting isotopes emit rays of energies too high to be useful in diagnostic radiography, there are a fair

number which have gamma rays of energies in the range of 30 to 100 kev. Such isotopes are potentially applicable to diagnostic work.

2 *K electron capture isotopes* Some isotopes have relatively too many positive charges in the nucleus. To correct this situation the nucleus may draw in an electron (negatively charged) from the closest orbit of satellites, namely the K orbit. This missing electron is then replaced by an electron from an outer shell. When the electron moves in, an x ray is emitted in the same manner as from the metallic target of an x ray machine. In the case of certain isotopes this x ray is of proper energy for diagnostic use and has been utilized experimentally.

3 *Internal conversion isotopes* In certain gamma emitting isotopes of proper configuration the gamma ray may not escape through the orbital electrons but may react with one of the electrons and impart enough energy to it to cause ejection from the orbit. The place of the ejected electron is then taken by an electron from an outer orbit and an x ray is emitted in the process. This mechanism gives rise to a certain amount of the radiation emitted from a radioactive thulium source.

4 *Beta emitting isotopes* Most of the weight and lack of mobility in conventional x ray machines is associated with obtaining high energy electrons for bombarding a suitable target. There is nothing unique about these electrons and any source giving a sufficient number of similarly energetic electrons could be substituted for this part of the x ray machine. There are a number of isotopes which emit beta particles of various energies. Because beta particles are electrons, it appears likely that such isotopes might be of value for the production of x rays. In the simplest form an "x ray machine" could be made with a beta source in the following manner. Encapsulate the radioactive material with a sufficient thickness of steel or other material to prevent the escape of any beta particles. This is easy to do because these particles are not very penetrating. Then add enough additional shielding material on all sides except one to prevent the escape of x rays. An x ray beam will then be obtained through the unshielded side. There are, in such a simple device, three mechanisms by which beta particles give rise to x rays. These mechanisms are

(a) "**Characteristic**" x radiation. When the beta particles strike atoms of the encapsulating material or other source atoms in a certain percentage of cases they will eject electrons from one of the electron orbits. When this ejected electron is replaced by the moving in of an electron from another orbit an x ray is emitted. The energy of this x ray will be a characteristic of the type of atom (the element) bombarded.

(b) External *bremsstrahlung* As the beta particles are slowed down and finally stopped by the encapsulating or source material itself many of them will give up their energy as x rays (*bremsstrahlung* or braking radiation)

(c) Internal *bremsstrahlung* In addition to the above two mechanisms which occur in the conventional production of x rays there is a third mechanism which is peculiar to isotopes. The beta particles which are emitted are electrons which are ejected from an atom nucleus. The nucleus has certain energy forces which hold it together. When these electrons (beta particles) are ejected they may be slowed slightly or their direction may be changed by the nuclear energy forces. The energy of motion which they lose may then appear as radiant energy (x rays). These x rays are designated as internal *bremsstrahlung* to indicate that the interaction of the particle with the emitting nucleus is responsible for the production rather than the reaction of the particle with some neighboring or remote atom as in the case of external *bremsstrahlung*.

In addition to simple considerations of energies emitted by various isotopes there are other factors of importance in the selection of isotopes for radiographic use. No isotope continues to emit radiation for an infinite period of time and the rate at which radioactive strength is lost varies from one isotope to another. The rate of loss of activity is generally denoted as the half life of the isotope: $t_{1/2}$ the length of time required for loss of half of the original source strength. It is obvious that to be of practical value for radiography an isotope must possess a reasonably long half life.

Another factor which requires consideration is the relative availability and ease with which an isotope can be produced. For isotopes which are produced by activation of an inert form in a nuclear reactor (thulium for example) the so-called neutron capture cross section is of importance. The cross section is an index of the probability that any one neutron will react with an atom of the material to produce a radioactive atom. The higher the cross section the easier it is to produce an isotopic source of high strength.

THE PORTABLE THULIUM SOURCE

Thulium¹⁷⁰ is the radioisotope produced by neutron bombardment of naturally occurring thulium¹⁶⁵. It emits an 84-kev gamma ray and an associated 52 kev x ray produced by internal conversion. Both those radiations are of proper energy to be useful for human radiography. Because of the beta particles which are also emitted in the radioactive decay of thulium there is an accompanying *bremsstrahlung* and characteristic x radiation which results in a wide total spectrum of radiation energies. These accom-

panying radiations, however, probably do not seriously interfere with picture taking. In addition to possessing radiation of proper energy the thulium possesses other desirable characteristics. It decays with a 129 day half life that assures a reasonably useful life. Thulium¹⁶⁹, the parent material, is reasonably easy to activate in a nuclear reactor, because it has a neutron cross section of 118 barns. Due to these desirable characteristics thulium¹⁷⁰ had been used previously by other workers to demonstrate the feasibility of isotopic radiography and was chosen by this laboratory for use in the development of a practical source unit.¹

A 400 mg (about 1/70th of an ounce) sample of thulium obtained from the Ames Laboratory was activated in the materials testing reactor at the National Reactor Testing Station in Idaho. The active material was doubly encapsulated in a thin aluminum container to prevent any leakage of radioactive material and placed in a lead hemisphere 5 inches in diameter to prevent exposure of transporting personnel to radiation. The sphere contained appropriate ports for loading and for exit of the radiation beam. A shutter mechanism was incorporated to allow precision of exposure times. The entire unit which weighed 48 pounds, was then mounted on a pack frame for easy mobility. The source unit and pack frame are shown in figure 1.

The source unit is extremely simple to operate and requires little training. It is set up for use on telescoping tripod legs which allow easy adjustment of distance from source to the specimen to be radiographed. The shutter mechanism is opened manually and is closed by a manually operated cable release. Exposure times (which with the present source vary from 15 to 180 seconds depending on type of film used, body part radiographed, at camera) are measured with a stop watch or with a sweep second hand of a wrist watch. Figure 2 illustrates the operation of the source unit.

Any type of standard radiographic film or paper can be used with the source. The best results, of course, are obtained with standard film and darkroom developing. Because specialized equipment required for darkroom work may not be available under field conditions it may be necessary to use some sort of "self contained" cassette (film pack). There are a variety of potential methods for producing cassettes which are suitable for field use. The Land Polaroid method uses individual packets of developing and stabilizing material which are integral parts of the cassette. Methods of simple, rapid development with a minimum of supplies as well as daylight processing are also available. Figure 3 illustrates a typical roentgenogram taken with the portable source and developed by conventional means. Figure 4 shows a roentgenogram taken with the portable source and developed in an experimental type cassette developed in this laboratory. This particular type of cassette is completely "self contained" and requires no addi-

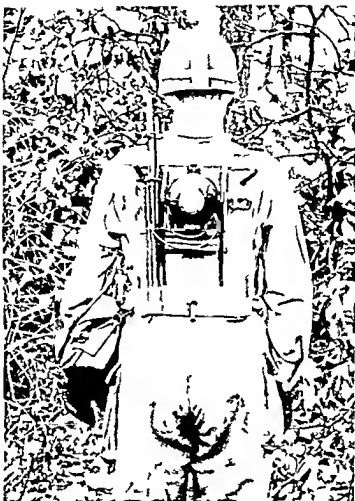


Figure 1. Portable isotopic beta emitting source mounted on a backpack.

tional facilities or equipment. While these roentgenograms do not match the technical excellence of conventional types it is apparent that they are adequate for most emergency work. It is anticipated that considerably better pictures can be obtained with improvements in the source and in developing techniques.

THE PORTABLE ISOTOPIC BETA EMITTING SOURCE

In view of the numerous possibilities for the production of useful diagnostic radiations from isotopes it is apparent that the thulium gamma ray source is not necessarily the only or best method for isotopic radiography. After considering alternative methods for isotopic radiography it was decided to attempt to adapt pure beta emitting sources to the problem by using the basic principle by which conventional x rays are produced. X rays

are conventionally produced by bombarding a metallic target with high energy electrons. The energy of the γ ray beam produced is



Figure 2 Operation of the portable thulium source

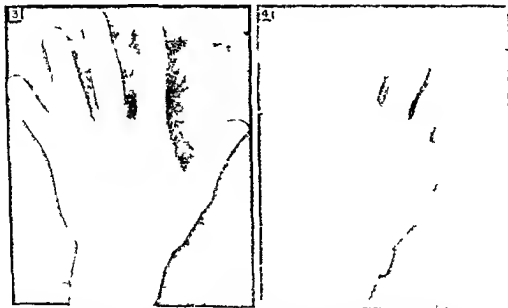


Figure 3 Typical roentgenogram taken with portable source and developed by conventional means. Figure 4 Roentgenogram taken with portable thulium source and developed in an experimental self-contained cassette.

characteristic partly of the target material and partly of the energy of the incident electrons. Beta particles are electrons and various isotopes emit these electrons with various energies. By obtaining an isotope with proper energy and encasing it in a suitable target material it should be possible to closely approximate a conventional x ray beam. It will not be identical because of an internal *bremsstrahlung* component (one source of x rays) which is characteristic of the isotope and because of external *bremsstrahlung* and characteristic radiation produced in the source material itself. These factors will tend to give a broader spectrum of energies than is obtained with an x ray machine.

In order to test the application of this principle to the problem of isotopic radiography the following preliminary studies were made. A commercially available beta particle source consisting of radioactive strontium and radioactive yttrium in an equilibrium mixture was obtained. The active material as obtained was completely encased in a steel cylinder. At one end of the cylinder the wall is very thin (0.002 inch of steel and 0.010 inch of aluminum). This wall is sufficiently thin to allow some of the beta particles to pass through it. Such beams of beta particles are widely used in medical practice. The emergent beam consists almost entirely of beta particles emitted from the yttrium⁹⁰ which gives off the more energetic particles. Practically none of the beta particles emitted by the strontium⁹⁰ are able to penetrate this window. A certain percentage of the beta particles stopped by this source material itself, the wall of the cylinder or the thin window give rise to x rays (characteristic and/or *bremsstrahlung*). These rays were used to make roentgenograms. Because the beta particle beam emergent through the thin window would contribute radiation dosage to the subject without contributing to picture taking the entire source was placed in a lucite well which absorbed these beta particles without interfering particularly with the x ray beam. Figure 5 illustrates the setup used to make radiographs with strontium source. Despite a number of technical disadvantages to the particular source used (for example it had a large focal spot and relatively low source strength) remarkably good radiographs have been obtained. Figure 6 shows a typical radiograph made with this arrangement.

This type of isotopic radiography is still in the experimental stage and has not been developed to the point of practical usage as yet. It does show considerable promise however and together with the thulium unit tends to indicate the vast potential for future development in the field of isotopic radiography.

The unit described in this report is the Army Medical Research Laboratory, Fort Detrick, Maryland. The unit is a large, portable, self-contained unit. It is designed for use in the field and is suitable for use in the laboratory. The unit is designed for use in the field and is suitable for use in the laboratory.

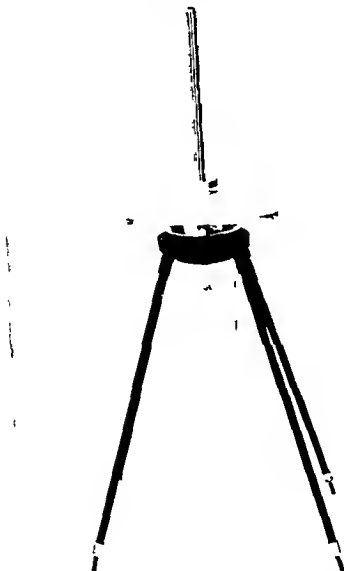


Figure 5 Experimental setup for beta radiography

COMMENTS AND CONCLUSIONS

Diagnostic radiography of human beings by means of radioisotopes is still largely in the experimental stage although feasibility of the use of thulium¹⁷⁰ has been amply demonstrated and radiographic units employing this material will probably become available in the near future. Such portable units would undoubtedly prove of great value to the medical services for use in the field (battalion aid, collecting, or clearing stations), in remote or isolated installations, or for emergency use in the event of civilian disasters. At the present time isotopic units cannot compete with conventional x ray machines from the point of view of diagnostic excellence. Their value is primarily in their portability. The diagnostic excellence can undoubtedly be improved by further research and development. Improvement in the design,



Fig. 6. Typal radiograph made with the thulium source

source strength and purity of the thulium source described in this report is relatively easy to accomplish and would add considerably to the contrast and definition on films made with it.

One difficulty with isotopic sources is that the energy spectrum emitted is relatively fixed and cannot be easily varied as it can with conventional Coolidge tube x-ray machines. Changes in energy are desirable for making radiographs of various body thicknesses. It seems likely that with further research a number of isotopes emitting different gamma or x-ray energies can be developed for practical use. It might then be feasible to mount a number

of these isotopes on a revolving disk inside a radiation shield. The radio-grapher might then be able to rotate the proper source into position for use in much the manner that a microscopist selects the lens on his microscope for proper magnification. When and if such an isotopic x ray machine is developed the combined portability and versatility of the unit should prove invaluable to the military medical service.

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NO RADIOLOGICAL HAZARD

Many patients are given tracer doses of radioactive isotopes as a diagnostic procedure. In the event of an accidental death such a patient constitutes no radiological hazard because the tracer doses used are small. Radioactive gold (Au^{198}) and radioactive iodine (I^{131}) are however used therapeutically. This is done only in a hospital and the hospital is required to have a radiation safety officer. No patient receiving isotopes should be discharged from the hospital until his radioactivity is down to 30 mc. If such a patient dies suddenly after leaving the hospital there is no radiological hazard in performing an autopsy or embalming the body.

—EDITORIAL

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DIAGNOSTIC CRITERIA OF FIBULAR COLLATERAL SPRAIN OF THE ANKLE

MARSHALL K STEELE J L t na t (MC) USN

EVERY plantar flexion inversion injury of the ankle joint unaccompanied by roentgenographic evidence of a fracture is classified as a sprain but should be considered a potentially self reduced dislocation until proved otherwise

It is true that the sprain dislocation is of momentary duration and that it is spontaneously reduced but if such an injury is treated as a simple sprain serious incapacity may remain because of relaxed ligaments and easy subluxation of the ankle joint

In the simple sprain there has been stretching or tearing of a few fibers of the fibular collateral ligament of the ankle with normal stability of the joint On the other hand in a severe sprain there has been an avulsion of part or all of the components of the external ligament including the lateral capsule with increased mobility of the talus whenever the foot is forcibly inverted and plantar flexed

Sprains have long been recognized as is indicated by the story of Darius in 400 B C and yet there are but few scattered reports on the subject of injury to the fibular collateral ligament of the ankle

Bonnin and Watson Jones have investigated and reported on this injury Bonnin stressed the importance of the calcaneofibular ligament Leonard¹ and Anderson and associates discussed the anterior talofibular ligament in an attempt to correct the pathologic anatomy Watson Jones described clinically a well defined sulcus beneath the lateral malleolus such as is noted in figure 1 This patient had had an unstable ankle for two years which was surgically repaired successfully in 1953

Likewise Watson Jones noted the roentgenographic evidence of tilting of the talus as seen in figure 2 There is loss of parallelism between the articular surfaces of the talus and tibia with a tilt of the talus in its long axis This is an indication of rupture of one or more components of the fibular collateral ligament The anteroposterior view of the ankle is taken with

stress applied on both the inverted and plantar flexed foot Watson Jones found this necessary in the diagnosis of the less severe sprains. If pressure was applied gently but firmly, little or no pain was produced and no anesthesia was required.



Figure 1 A well defined sulcus beneath the lateral malleolus is evident

Clayton and associates⁶ reported adequate paralysis of the peroneal muscles by injecting into the peroneal nerve at the fibular head, thus avoiding the possibility of infection of the hematoma, as seen in figure 3. Hutcheson⁷ reported on testing relaxation of the fibular collateral ligament after the local sural nerve block was performed as demonstrated in figure 4. The injection is made along the lateral border of the fibula, about 3 inches proximal to the tip of the lateral malleolus. This latter method of nerve block for the roentgenographic diagnosis of the severe sprain is the one most frequently carried out at this hospital. Others have advocated the use of general anesthesia to accomplish the same purpose.

Because of the frequency of this type of sprain in the 18 to 45 year age group, and because of the disability that it produces, especially if improperly treated, it is significant in military as well as civilian medicine.

ANATOMY

There are three components of the fibular collateral ligament: the anterior talofibular, calcaneofibular, and the posterior talo-



Fig 2 Tilt of the talus is demonstrated by the centigrams



Fig 3 Palsy of peroneal muscle is produced by injection of poison into the head of the fibula

Fig 4 Surgical nerve block is performed by injecting procaine along the lateral border of the fibula, about 3 inches proximal to the tip of the lateral malleolus according to the method.

fibular fasciculi (fig 5) The anterior talofibular ligament, the shortest of the three, is located beneath the overlying capsular tissue and extends from the anterior border of the lateral malleolus to the neck of the talus The calcaneofibular ligament, the longest of the three, is the only one which is extracapsular and extends from the tip of the fibula downward and slightly backward to the calciculus on the lateral surface of the calcaneus

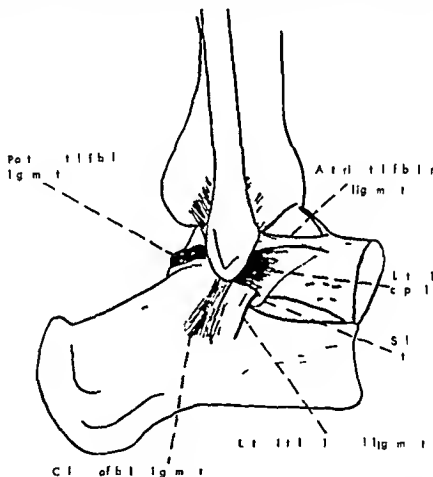


Figure 5 Diagrammatic representation of the three components of the fibula collateral ligament

The third component is the posterior talofibular ligament, the strongest and most deeply seated of the three. It extends from the digital fossa of the fibula to the lateral tubercle on the posterior aspect of the talus immediately lateral to the groove for the tendon of the flexor hallucis longus.

The anterior and posterior articular capsule is thin, joining the tibia and the talus, whereas the lateral capsule is somewhat thickened and found between the anterior talofibular and lateral talocalcaneal ligaments, blending closely with them before passing beneath the calcaneofibular ligament. It extends from the

lateral border of the talus to the medial surface of the lateral malleolus

DIAGNOSIS

Bonnin believes that in the severe adduction strain which has been considered only second in frequency to external rotation violence the calcaneofibular ligament is the first and easiest to rupture resulting in rotation of the talus and that further strain will in turn result in tearing of the lateral capsule and the anterior tibiofibular ligament due to strain on the inner fibula. On the other hand Anderson and LeCocq emphasized the importance of the tearing of the anterior talofibular ligament as the primary result of the plantar flexion force of the inverted foot. They believed that a tear of the anterior talofibular ligament allows anterior displacement of the talus in the ankle joint motion in the coronal plane and rotational displacement of the talus medially on its vertical axis and when there is an associated tear of the lateral capsule roentgenographic study will reveal the talus tilted to as much as 7 degrees. When both the anterior talofibular and calcaneofibular components are involved the talus rotates as much as 12 to 30 degrees in its long axis. When all three components are involved the ankle is found to be completely unstable. Anderson and LeCocq had 3 such cases in the 27 they reported on. This compares with our figures of 3 unstable ankles among 24 patients with partially torn fibular collateral ligaments.

As a result of the study made by Bonnin table 1 has been prepared to show the approximate ratio of the degree of talar tilt of the anesthetized plantar flexed inverted foot to the extent of fibular collateral ligament tear.

TABLE 1 Degree of talar tilt

Ligament ruptured	Talar tilt (degrees)
Anterior talofibular	5
Calcaneofibular	5-15
Anterior talofibular and calcaneofibular	15-30
Anterior talofibular and posterior talofibular	30-45

Adapted from page 127

In a study of 100 men and 100 women without histories of ankle injury Bonnin pointed out that 4 percent of the women and 5 percent of the men had a bilateral equal congenital variant in ankle mobility which he called the hypermobile ankle. In these

persons have found a 5 to 15 degree tilt of the talus. Because of the danger of underestimating the severity of a sprain, all sprained ankles with this degree of tilt treated at this hospital were immobilized in plaster for 3 to 4 weeks.

From 1 January 1952 to December 1954, 73 ankle sprains with out fracture were reported by the orthopedic department of this hospital (table 2). Of these, 24 (33 percent) revealed from 10 to 60 degrees of talar tilt on roentgenographic study. Admitting that this percentage is high, we have to assume that there were other mild ankle sprains treated by naval medical officers in this vicinity that never reached our department.

TABLE 2 *Reported ankle sprains (U S Naval Hospital, Philadelphia Pa. January 1952 to December 1954)*

Sprain	Number	Percent
With fracture	106	
Without fracture	73	100
Mild	49	67
Severe talar tilt	24	33

Nerve block anesthesia was used in almost every one of our reported cases. In the most recent cases, we have taken lateral roentgenographic views of the forced plantar flexed ankle, in addition to the anteroposterior forced inversion, plantar flexed views, but have failed to demonstrate the anterior displacement of the talus described by Anderson and LeCocq.

CASE REPORTS

Figures 6 through 8 show roentgenograms of two of our patients to demonstrate different degrees of tilting of the talus. Figure 6 shows a roentgenogram, taken without anesthesia, of a severely sprained ankle in which all three components of the fibular collateral ligament are torn. Rotation of the talus is 45 degrees.

Case 1 This patient was a 41 year old man who fell down a steep ladder aboard ship in 1950 twisting his right ankle in inversion. Because his roentgenograms were negative for fracture, he was treated for 3 days with bed rest and an ace bandage before being returned to duty. He then had increasing disability due to instability of the ankle. He was admitted to this hospital late in 1951 and underwent a Watson Jones tenodesis of the ankle.

Case 2 The second case is that of a 19 year old patient whose ankle was sprained in October 1954 when he was kicked on the lateral heel while playing basketball. There was a moderate degree of swelling with pain and limitation of ankle motion. The

roentgenograms were negative for fracture (fig 7) These views were taken without anesthesia but with the ankle forced in plantar flexion and inversion The talus is tilted 10 degrees



Fig 6. Roentgenogram of laterally sprained ankle. Rotation of the talus 45 degrees

Figure 8 shows the ankle of the same patient under the same circumstances after a sural nerve block was performed. Rotation of the talus has now increased to 40 degrees, showing the effect pain and peroneal muscle spasm has in these sprains. In the lateral views we attempted to displace the talus forward in the coronal plane but with questionable success. This diagnostic sign of Anderson's has not been seen in the few cases we have evaluated in that respect. The patient was treated with a short leg walking cast.

TREATMENT

Our treatment of lateral ankle sprains has depended on the severity of the sprain and the amount of swelling present. In the mild sprains seen early before swelling has occurred attention was directed toward elevation, ice bags for a few hours, bed rest, and a firm pressure dressing to prevent further swelling and produce temporary immobilization. If swelling already exist-



Figure 7 The talus of this sprain is in its normal position. In all views is forced in position of the talus.



Figure 8 Same patient as in figure 7 after medial rotation of the talus has increased to 40 degrees.

ed then elevation and support alone was carried out Active motion was permitted by the second day ambulation by the third to sixth day and duty by the tenth day There were some patients who required adhesive strapping with the foot everted or on outer heel wedge

In the severely sprained ankles in which the talus was found to tilt the early treatment was much the same as in the mild cases except that immobilization was continued Of the 24 severely sprained ankles reported on 6 were originally treated elsewhere as mild but disability continued In 21 of those patients we immobilized the ankle with a short leg plaster cast with walker for from 3 to 6 weeks Because of the frequency in change of duty stations the follow up studies have not been satisfactory however no recurrences were revealed

Of the three patients with chronic subluxed ankle sprains one was transferred without treatment to an Air Force Hospital because of a disposition problem The one whose roentgenograms have been shown (fig 6) received surgical treatment 2 years following his injury The third patient whose talus tilted 40 degrees (fig 8) also received a Watson Jones tenodesis 1 year ago Figure 9 is a recent roentgenogram of this patient's ankle using sural nerve block anesthesia and forced inversion plantar flexion of the foot The talus now shows hardly a trace of tilting and the patient is performing his full duty despite occasional soreness over the lateral malleolus after long walking and standing Roentgenograms now show no evidence of a talus tilt.

It has been reported that acute cases of complete tears of the fibular collateral ligament oftentimes will not heal with conservative plaster treatment In these cases Anderson and LeCocq believe that surgical intervention is justifiable as the primary treatment if the patient is placed in the hands of surgeons trained in this technic Plaster immobilization followed by peroneal exercises and a lateral heel wedge has seemed adequate in our experience

SUMMARY

The use of roentgenograms of both the inverted and plantar flexed foot to determine the severity and nature of the sprained ankle has been emphasized It has been shown that the degree of sprain is more accurately demonstrated if pain and peroneal muscle spasm is reduced or eliminated To accomplish this several methods were mentioned however the orthopedic department at this hospital has found either the peroneal or sural nerve block to be adequate Forward displacement or rotation of the talus or both is diagnostic of a severe sprain In the loss of man-hours at work disability and even



Figure 9 Same patient as in figures 7 and 8 showing essentially no tilting of the talus

charge from the service through improper treatment, it has been suggested that the aforesaid knowledge of the sprained ankle be more widely disseminated to those of the medical profession less familiar with its seriousness. When this is accomplished, early diagnosis and proper treatment by the physician will greatly reduce the disability resulting from such a common injury.

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A NEUROLOGIC SYNDROME OCCURRING DURING TREATMENT OF AIR EMBOLISM

JACK L. KINSEY *Commander (MC) USNR*

THE problem of air embolism in a submarine escape training tank was presented in a previous article.¹ This report will be confined to the presentation of two cases that demonstrated neurologic symptoms with observations during treatment.

CASE REPORTS

Case 1 This man was undergoing training in free ascent at the submarine escape training tank at this submarine base. He surfaced from a 100-foot free ascent with no apparent difficulty except for being short of air and needing a little lift to overcome neutral buoyancy caused by blowing out too much air during the ascent. He had been topped at 50 feet by one of the instructors when he was told to be popping his bubbles (i.e., ascending faster than the bubbles of his halothane) and was signalled to exhale more rapidly which he did. On surfacing he swam to a ladder climbed out and walked distance of about 50 feet. Following this he complained of weakness in his legs and of feeling funny. His knees buckled he lugged in progressively rapidly became confused and collapsed. He was carried to the elevator and into the recompression chamber where he was under increased pressure within 3 minutes of the onset of symptoms.

At a pressure equivalent to 165 feet of water he was completely relaxed being able to stand walk and perform all movements of the lower extremities. In addition he was well oriented and emotionally content. After 30 minutes he was situated up using table 3 of the U.S. Navy Treatment Table for Compressed Air Illness. His condition remained satisfactory until about the seventh hour at the 30-foot stop (about 10 hours from onset of symptom). At that time gradual weakness of the lower extremities and urinary retention developed. In view of the severe character of symptoms he was again recompressed to depth equivalent in pressure to 165 feet of water.

After 2 hours at this depth with no relief it was believed that edema of the spinal cord resulting from the original trauma was the basis for his symptom. He was transferred up using table 4 of the treatment table. During the 38 hour decompression on this table the patient made

¹ F. M. U. S. N. J. M. D. at R. ar h L. bo. ory U. S. N. 1 Submar. Base New L. nd n, Co. n. C. mdr K. y now gued Staff, C. mma ub aris Squadro F. FPC San F. is Calif

gradual but incomplete recovery. Voluntary movements returned to the lower extremities and increased muscle strength was noted. The patient was able to stand with a little help and walked out of the chamber with assistance. He was admitted to the base infirmary and observed and treated there for 3 weeks. Treatment consisted of administration of antibiotics, regular catheterization to prevent bladder complications, physiotherapy and general supportive measures. When he was discharged to duty residual neurologic signs were minimal.

Comment. In considering the cause of this clinical picture it must be noted that the man was not only overexposed by 5 minutes to a depth of 112 feet (according to the U. S. Navy Standard Decompression Tables¹) but he also was traveling ahead of his bubbles for a short period at about 50 feet. The differential diagnosis between decompression sickness and air embolism could not be definitely established, in fact, it could have been either or both, with central nervous system involvement in the spinal cord and brain.

Case 2. This man was being trained in free ascent. On a previous day he had successfully completed two 18-foot and one 30-foot free ascents. His 30-foot ascent was not technically perfect as he apparently expelled too much air and being of almost neutral buoyancy had to have some help reaching the surface. On the day of his accident he was scheduled to make one 30- and one 100-foot free ascent. He left the 30-foot lock and started his ascent in a proper manner. At about the 35 foot level, however, his rate of ascent accelerated. He was signaled to exhale more rapidly and the instructor attempted to hold him. He slipped from the instructor's grasp and ascended rapidly until another instructor dropped from the surface, stopped him at the 15 foot level, held him until he had expelled all the air possible and then helped him to the surface. On reaching the surface he answered affirmatively when asked if he felt all right and immediately collapsed into what appeared to be a tonic convulsion.

The man was carried to the recompression chamber and pressure was begun less than 2 minutes from the onset of symptoms. Due to a misunderstanding he was recompressed to a depth equivalent to 180 feet of water. This took $2\frac{1}{2}$ minutes. He regained consciousness almost immediately. During the period of recompression the right arm and both legs were rigid and the left arm was flaccid. After 1 minute at the 180 foot level the tonic contraction of the muscles of the right arm and both legs subsided. At this time the left leg was definitely weaker than the right and the left arm remained flaccid.

He was kept at this level for one half hour then brought to the 165 foot level where it was decided to decompress him using table 4 of the treatment tables. The muscle strength of the left arm and leg returned gradually and about an hour later voluntary control of the left arm and leg returned including fine movements of the hand and fin-

gers. An area of hypesthesia involving the entire left arm and shoulder was noted at this time. The tendon reflexes were bilaterally equal and within physiologic limits and no pathologic reflexes were elicited.

About $4\frac{1}{2}$ hours after treatment began and at the 60-foot level the patient noted some difficulty in locating food on his plate. Neurologic examination disclosed the left extensors to be somewhat weaker than the right and the tendon reflexes less reactive than the right. Three hours later the weakness had increased markedly. He was unable to stand because of weakness in the left leg and while sitting would drift to the left. Subjectively there was the complaint of numbness in the left arm and shoulder which corresponded to the area of hypesthesia noted earlier.

In the light of the previous experience with neurologic air embolism and because the recurrence of symptoms was not severe the decision was made to continue with decompression according to the treatment table (table 4). At the next stop (50-foot level) the left side weakness gradually receded and 3 hours later the patient was able to stand unaided. Improvement continued and on reaching the surface he had apparently completely recovered neurologically. He was observed at the treatment hospital for 2 days and discharged to duty.

Comment. From the standpoint of the mechanics involved in air embolism it was interesting to learn from later discussions with the patient that he was aware of his increased rate of ascent and the need to exhale more rapidly. He stated that he was conscious of his previous failure to complete his 50 foot ascent because of exhaling too much and to counteract this inspired as deeply as possible however in spite of the knowledge that he was passing his bubbles and a feeling of increasing tension in his chest he could not increase his rate of exhalation. In other words he was ascending so rapidly that the rate of expansion of the air in his lungs was increasing to the point that a relative expiratory bottleneck apparently developed and his maximum rate of exhalation was insufficient to reduce the intrapulmonic pressure. The basis for the bottleneck may be a change in configuration of the tracheobronchial tree similar to that which was reported by Ross as occurring during coughing.

DISCUSSION

Two patients have been presented one with decompression sickness and/or air embolism and one with air embolism both of whom exhibited findings indicative of serious central nervous system damage.

The initial neurologic conditions were relieved in both instances by recompressing the patients to a pressure equivalent to a depth of from 165 to 180 feet of water after which they were slowly decompressed according to the U S Navy Treatment

Tables 3 and 4 After from 5 to 10 hours of decompression treatment the original symptoms reappeared markedly in case 1, and quite mildly in case 2. The first patient was recompressed to 165 feet a second time, with no improvement after 2 hours at this depth, and was again decompressed slowly (table 4) with gradual improvement. The second patient not only was not recompressed a second time but, in view of the relatively mild recurrence of symptoms and our previous disappointing experience with recompression in the first patient, was taken to his next decompression stop (50 feet) with no apparent deleterious effects.

It is postulated that in both of these patients the recurrence of neurologic signs was determined by localized edema in response to the original trauma. Hemorrhage was considered unlikely in view of the relatively transient nature of the recurrences. In case 1, the severity of the signs were at least partially accounted for on the basis of the spinal cord involvement and the small volume available for expansion in this area before marked impairment of function ensued. In case 2, the relatively mild recurrence could be attributed partially to a greater volume available for expansion before pressure impaired function, and possibly to a less severe involvement originally.

The lack of response to the second recompression in the first patient and the improvement without further recompression in the second suggests that recurrence of bubble formation was not the symptom-producing factor involved.

It must be pointed out that in casualties of this nature there is no diagnostic procedure which can differentiate the symptoms due to recurrence of bubble formation from those of localized edema except the response or lack of response to changes in ambient pressure. In doubtful cases, or in those with severe recurrences, it may be best to recompress in accordance with treatment tables. In those with mild recurrences or possible complicating brain or cord injury, however, it may be advisable to proceed with decompression for at least one or two stops with the patient under careful observation. If there is no further deterioration in condition or if improvement begins again (as in case 2) it can be assumed that the recurrence of symptoms is not due to bubble formation and the decompression can proceed in routine fashion.

SUMMARY

During treatment of neurologic types of decompression sickness and air embolism in two patients the initial neurologic symptoms recurred to a greater or lesser extent from 5 to 10 hours after the original trauma. These symptoms were not affected by changes in the ambient pressure.

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THE EXECUTIVE

As everybody knows an executive has practically nothing to do except to

- 1 Decide what is to be done
- 2 Tell somebody to do it
- 3 Listen to reason why it should not be done why it should be done by someone else or why it should be done in a different way
- 4 Follow up to see whether it has been done
- 5 Discover that it has not been done
- 6 Inquire why
- 7 Listen to excuses from the person who should have done it
- 8 Follow up again to see whether the thing has been done only to discover that it has not been done correctly
- 9 Point out how it should have been done
- 10 Conclude that as long as it has been done it may well be left where it is
- 11 Wonder whether it is not time to get rid of a person who cannot do a thing right to reflect that he probably has a wife and a large family and that certainly his successor would be just as bad and maybe worse
- 12 Consider how much simpler and better the thing would have been done if one had done it oneself in the first place
- 13 Slightly reflect that one could have done it right in 20 minutes and as things turn out one has to spend two days to find out why it has taken three weeks for somebody else to do it wrong

—OSSINING ROTARY CLUB

New York Journal of Medicine
J 15 1954

PSYCHOPATHOLOGIC REACTION PATTERNS IN THE ANTILLES COMMAND

MAURICIO RUBIO *Major MC USAR*

MARIO URDANETA *Captain, MSC USAR*

JOHN L. DOYLE *First Lieutenant MC USAR*

A GROUP of striking psychopathologic reaction patterns, precipitated by minor stress in persons with well defined character disorders, has been observed in a limited section of the insular (Puerto Rican) personnel of the Antilles Command. Because of their clinical resemblance to more serious conditions such as schizophrenia and epilepsy, these behavior disorders present a problem in medical management and administrative disposition.

In order to analyze the components of these reactions, all of the outpatients and the medically evacuated inpatients seen at this hospital from 1 January to 31 December 1954 were studied. A total of 998 outpatients was observed, of which 517 were insular military personnel. Sixty one inpatients were evacuated through medical channels.¹

PATTERNS OF REACTION

The most outstanding reaction pattern is characterized by a transient state of partial loss of consciousness most frequently accompanied by convulsive movements, hyperventilation, moaning and groaning, profuse salivation and aggressiveness to self or to others in the form of biting, scratching or striking, and of sudden onset and termination. Less often there is complete flaccidity. The duration varies from an isolated crisis of a few minutes to a series, lasting a few hours in the convulsive form and up to two days in the flaccid variety. The reaction produced by the episode in the immediate environment appears to directly influence its duration; the greater the secondary gains, the longer it lasts. The crises are quite spectacular and when they take place in the company area or at home they cause great alarm and confusion to those around the patient and in some instances, immediate removal of the source of stress. They also bring considerable attention and special privileges to the patient and when he is brought to the hospital and placed in seclusion in a cool, semidarkened room his symptoms usually subside in a few minutes.

The degree of dissociation from the environment is never complete and the patient avoids some awareness of his surroundings especially when he believes that he is not being observed. He is also careful to avoid sustaining serious injury, and at the onset of the crisis finds a bed or falls gradually to the ground. Upon termination of the crisis he claims complete amnesia for it often appears more alert than prior to it and expresses a sense of relief as though he had experienced an emotional catharsis.

Another pattern consists of sudden outbursts of verbal and physical hostility with destructive assaults and expression of some persecutory trends. During these episodes the patient is markedly hyperactive and noisy but is discriminatory in the type of property he destroys and the persons he attacks. Some of these patients also claim complete amnesia for the outburst particularly those who face disciplinary action as a result of it. These episodes are of very short duration but repeat themselves often if the precipitating stress is not removed. They are locally known as *mal da palaa* (disease of fighting). The patient's personality in the interval between attacks shows only the traits of the character disorder to be described later.

A third pattern is manifested by transient regression to infantile emotionality and behavior. It has a rapid onset and lasts up to a few days. The patient acts and cries freely, assumes an attitude of complete helplessness and tends to depend on others in a childish manner. His speech is characteristically infantile and the overall picture gives the impression of mental deficiency. On occasions he is found adopting fetal positions. Ordinarily the clinical picture disappears overnight and the patient awakens entirely free from symptoms and with a good recollection of his past behavior. There is usually a feeling of relief and well-being similar to the one observed after the pattern described earlier.

Pseudos suicidal attempts constitute the fourth clinical modality found in some of these men. Superficial scratches on the anterior aspects of the wrist, forearm and chest carefully inflicted with razor blades, fountain pens or pins are the commonest means of self injury. The ingestion of rat poison or disinfectants mixed in drinks and attempts at hanging are also frequent. All of these attempts are made in a dramatic fashion in the presence of various people who can easily intercept the act. Many of them occur at home while on pass and the patient makes a histrionic announcement of his intentions to his family.

A last pattern of reaction considerably less striking than the previous four is characterized by mild dissociation manifested by inability to concentrate, forgetfulness, loss of interest in personal appearance, some degree of preoccupation and slight flattening of affect. It usually lasts one or two days.

These clinical reactions do not exclude one another, on the contrary, two or more varieties may be found to occur in the same person at different times

PRECIPITATING FACTORS

Some types of minor stress that precipitate the above patterns of reaction include induction into the Armed Forces, transfer from induction center to basic training camp, experiences in basic training particularly the weapon familiarization, infiltration, and combat courses, prolonged hikes stand by details that prevent going home on pass, minor reprimands from officers and non-commissioned officers, and alerts for overseas shipment and routine overseas duty. It is of interest to note that the prospect of discharge from the service at the completion of a tour of duty and the consequent return to a smaller income and lower living standards are also important precipitating factors.

A careful survey of the psychiatric histories of these patients reveals remarkable similarities in the genetics and dynamics of their personalities. The first and most outstanding feature is a strong maternal attachment and dependence which is not produced or encouraged essentially by overprotective or overpossessive maternal attitudes as is the case in more sophisticated groups, but which is passive on the part of the mother and passive aggressiveness on the part of the child. The patient often verbalizes this attachment by expressions to the effect that he will never marry as long as his mother is living because "Mother always comes first," et cetera. At times it acquires such extreme proportions that the son sleeps in the same bed with the mother up to the time of induction. This attachment continues even if the patient marries and becomes responsible for severe interpersonal problems and conflicts of loyalty. It is not unusual to find that the patient brings his wife to live in the parental home, or that on weekend passes he goes to visit his mother first.

A second element in common consists of a lack of proper identification with the father or with an adequate masculine figure. This is based on the father's equally dependent, inadequate personality. The usual findings indicate that he stopped working during the patient's early childhood or even earlier, because of a minor injury or ailment, or that he has abandoned the family, or that he drinks to excess and works sporadically.

The environmental conditions under which some of these persons have been brought up—with little influence from our highly competitive culture, satisfied with simple subsistence and such as harvesting sugar cane or nonstop labor, living on a very small income—form the third common feature in the backgrounds of these patients. In the early part of this study it appeared that those persons brought up in such conditions formed the great

majority of those affected. As the observations proceeded however it became evident that a fairly large group of patients lived in a large community such as San Juan yet were amazingly confined to a very small section of it almost entirely removed from the cultural progress of the city. Exceptionally these reaction patterns have been observed in persons of the social middle class whose strong maternal attachment and weak masculine identifications were prominent.

Typical histories revealed that these patients showed the predominant reaction pattern or a mixture of patterns from their adolescent years or earlier while under such minor stresses as being reprimanded by a parent or schoolteacher arguing with a girl friend or watching a street fight or other display of hostility. Those who had a pattern of verbal and physical hostility usually had a record of difficulties with the police. Because these reaction patterns had occurred from childhood or adolescence—under minor stress always episodically followed by complete spontaneous remission of the symptoms and with only the hysterical personality traits present during the intervals—they were clearly outlined as character disorders. In contrast with those suffering from acute dissociative reactions these patients showed no neurotic symptoms except for these transient reactions.

The character disorder resulting from these factors was that of a hysterical personality marked by (1) Emotional instability (2) extreme but essentially passive dependency needs that acquired a hostile aggressive character when there was a threat of loss of their source of dependence (these needs however were easily transferred from the mother to an institution like the Army the hospital et cetera) (3) marked sensitivity with great inability to tolerate pain criticism punishment or any other form of rejection (4) suggestibility and (5) psychosexual immaturity.

PROBLEMS IN MANAGEMENT

The person with this type of personality is particularly predisposed to cling to secondary gains such as those obtained from hospitalization. He does not want to return to duty and insists that he should be cured or given a pension because he will never be the same again. In view of this tendency a complete social history was taken on arrival at the hospital and before the patient was actually admitted in this manner it was possible to obtain a detailed account of any psychopathologic condition existing prior to enlistment because 1 or 2 days later the patient would give a totally different version emphatically denying any symptoms before induction.

The admission of such patients was strongly discouraged and the advantages of handling them on an outpatient basis were

explained to the medical and administrative personnel of the hospital and various dispensaries. Lectures on the nature and management of the more spectacular reaction patterns were delivered to all officers and to the first sergeants of the basic training center of this Command. The result was a considerable decrease in the inpatient load in the course of the 1 year period used for statistical studies. The average number of admissions per day in January 1954 was 45.3, in the following December, excluding the holiday period, it was only 13.6. When admitted to the hospital these patients were only kept for the necessary period of observation and promptly returned to duty while awaiting disposition, before the attachment to the more protective atmosphere of the hospital could take a firm hold.

Many of these patients were referred to the hospital on an emergency basis as psychotics and in view of the bizarre, acute manifestations were considered to be very dangerous to themselves or others. With the assistance of the above-mentioned lectures, however, the understanding especially of the line officers and enlisted personnel, improved greatly during the past 17 months.

Of the 517 insular military personnel, 281 were diagnosed as having character disorders, 202, or 71.9 percent of these, presented hysterical personality reactions as seen in table 1. Electroencephalographic studies were made in 29 of the 31 patients with partial loss of consciousness (group 1), normal tracings were found both awake and asleep. Sixty patients did not have a complete grammar school education. 47 had finished the eighth grade.

TABLE 1 *Reaction patterns in 202 patients with hysterical personality*

Group	Reaction	Number	Percent
1	Partial loss of consciousness	31	15.3
2	Crises of hostility	50	24.8
3	Transient regression	23	11.4
4	Pseudosuicidal attempts	19	9.4
5	Mild dissociation	79	39.1
	Total	202	100.0

Although the majority of the patients under consideration (124 out of 202) showed the typical reaction patterns during the course of basic training or before others developed symptoms in the period of pre embarkation leave or while assigned to duty in Puerto Rico.

The commanding general has designated the chief of preventive medicine as special assistant on a Center level. This status plus chairmanship of various Center committees such as the Safety Committee provides the preventive medicine officer with information and authority of action directly responsible to the commanding general.

The following outline further indicates the individual personnel participating in the Center's preventive medicine program.

ORGANIZATION AND PERSONNEL

- | | |
|--------------------------------|---|
| 1 Chief of Preventive Medicine | (Assistant to Commanding General
(Deputy Hospital Commander) |
| a Assistant to Chief | |
| b Health Nurse | |

The chief of preventive medicine has an assistant chief (a Medical Service Corps officer). A health nurse, two sanitary technicians, and a secretary are authorized.

The remaining partial list of officers and services demonstrates the flexibility of the organization pattern and the spread of responsibility for the specialized programs.

- 1 Epidemiologist (Chief of Laboratory—Hospital)
- 2 Venereal Diseases (Chief of Dermatology—Hospital)
- 3 Communicable Diseases (Assistant Chief of Medicine—Hospital)
- 4 Home Care (Chief of Outpatient Service)
- 5 Consultant (Chief of Preventive Medicine Division Army Medical Service Graduate School)
- 6 Maternal Health (Chief of Obstetrics and Gynecology—Hospital)
- 7 Children's Programs (Chief of Pediatrics—Hospital)
- 8 Nursing (Chief Nurse—Hospital)
- 9 Safety (Center Safety Officer)

PERSONNEL USED ON THE HEALTH NURSING SERVICE

The following outline shows personnel directly assigned for health nursing activities and additional personnel utilized on a student, voluntary, or co-operative mutual interest basis.

Assigned personnel

- One Public Health trained Army nurse
- One enlisted sanitary technician

Student personnel

- Dietetic interns
- Advanced obstetric nursing students
- Clinical technicians

*Guest speakers**Volunteers*

Red Cross Volunteers
Visiting Nurse Association

Liaison

District of Columbia)
Maryland) health agencies
Virginia)

The development of the Health Nursing Service Program at this Center began by establishing a "goal" and by the use of certain procedures. The goal was to promote the outpatient service as the health center whereby preventive health activities, both on the post and in the community, could be co-ordinated to serve the best interests of the command.

The procedures used were (1) co-ordination, use, and education of the professional staff, (2) evaluation and strengthening of existing programs, (3) establishing new programs as the need and facilities arose, and (4) maintaining liaison with local community agencies.

The need for "support of command" should be emphasized. This is essential in order to obtain personnel, facilities, transportation, and support of program operation. Command support permitted an organization that would interrelate activities of the Center such as outpatient clinic, professional services of the hospital health nurse, and off post health facilities.

By showing the possible benefits to be derived from the Visiting Nurse Association, the professional staff were educated to use this organization.

A further procedure was to evaluate and strengthen such existing programs as the venereal disease program and the maternal and child welfare program.

The health nursing service programs initially centered on additional service in maternal and child health primarily one of health education centered within the outpatient clinic and obstetric wards of the hospital.

The program consists of

1 *Group interviews of new obstetric and gynecologic patients*

Until September 1954 new obstetric and gynecologic patients were interviewed in groups by the health nurse during their first visit to the clinic. The primary purpose of these interviews was to answer the patient's questions and give brief instructions on the hygiene of pregnancy.

2 *Individual new obstetric and gynecologic interviews* This method adopted in September 1954 has proved to be more satisfactory than the group interview. The purpose of these interviews is to establish rapport, answer questions, introduce the patient to Army health nurse service facilities, make referrals, and to invite both husband and wife to attend the parents classes.

3 *Orientation conference with new obstetric and gynecologic patients* The so-called new obstetric and gynecologic orientation conference has largely substituted for the original group interview. On the second visit to the clinic, interviews are conducted with small groups of patients. The health nurse describes and explains the physical examination to be given by the obstetrician, and patients' questions are answered or presented to the obstetrician.

4 *Classes for expectant parents* The classes for expectant parents consist of a series of five 2 hour evening sessions held once a week. The series is repeated every 5 weeks. Before and after each class, and under the supervision of the health nurse, the students practice the baby bath procedure. During each class period, an appropriate film is shown. Guest speakers (dietician, psychologist, dentist) are scheduled for two sessions. The lecture-discussion method is used in teaching. Anatomic charts, models, posters, pertinent health literature, and layette equipment are used as aids.

5 *Visits to postpartum patients on obstetric ward* Twice each week, the health nurse conducts a class with postpartum patients on the obstetric ward, in which the baby bath procedure and formula making are introduced. Patients' questions are answered or referred to the ward physician. Patients, especially primiparae, are encouraged to use the visiting nurse service.

6 *Visits to postpartum clinic* The health nurse is present in the postpartum clinic to encourage patients to contact her about their health problems. Discussions are mostly about child care, and office visits to discuss individual problems are encouraged. The health nurse's office is located in the outpatient clinic to promote availability.

7 *Premature infant home evaluation* Premature infants are given special attention when referred by the pediatrician. Home investigation visits are made by the visiting nurse prior to the discharge of all premature infants, and a follow-up visit is made after the baby's discharge from the hospital.

8 *Child health* The usual well-baby clinic and immunization program are conducted. The health nurse's part in this program is to invite and encourage mothers to bring their babies to the appropriate clinic conducted by the pediatric service.

9 *Follow up file* A "follow up" file has been developed on babies whose mothers had a positive test for syphilis on cord blood in order to make sure the baby has repeated blood testing and physical examination

10 *Health education films* Movie films of an educational nature are shown in the outpatient clinic twice a week during the lunch hour. After the films are shown, a guest speaker discusses the subject of the film with the audience which is composed of military and civilian professional staff members and lay employees. Notices of the film showings are placed in the Daily Bulletin of the Center. Films are similarly shown in parent classes.

11 *Student training* The dietetic interns attend one parents class as part of their training. The advanced obstetric nursing students receive 10 hours instruction in the public health aspects of maternity nursing, as well as supervised experience with the health nurse. The advanced medical technicians assigned to the obstetric service attend one postpartum class.

12 *Health literature* Selected pamphlets, drawn from the stock of 69 different free pamphlets supplied on request from 11 different Federal, community and voluntary agencies are available in appropriate locations in the outpatient service and are distributed during parents' classes and lunch hour programs.

13 *Community agency referrals* Civilian health program referrals are on an experimental plan for 6 months with the District of Columbia Visiting Nurse Association for the purpose of promoting better health and reducing absenteeism among civilian employees. The service is limited to food service and auxiliary nursing service personnel (440 persons). Referrals are made on a sick pattern basis and on the request of the employee. The cost of the initial visit is borne by the Visiting Nurse Association. Additional visits are charged in accordance with the Association's policies. The trend has been for employees to return to work in less time than their sick patterns had previously indicated.

14 *Social service referrals* Most of the referrals to the medical social work service for casework result from interviews with new obstetric and gynecologic clinic patients.

15 *Visiting Nurse Service referrals* At present, referrals are mainly of postpartum, newborn and pediatric patients. It is planned to extend the service to all patients in the home care plan, particularly to those in the geriatric group. Included in the liaison visiting nurse service are the groups from surrounding countries. All referrals are made by the attending or ward surgeon through the Army health nurse. The Cancer Society also pays the Visiting Nurse Service for certain visits.

16 *Red Cross parent classes* The District of Columbia Visiting Nurse Association and the Red Cross hold parent classes. Expectant parents who are unable to attend parent classes at this Center are referred to these classes.

17 *Tuberculosis and venereal disease survey* An annual screening of military and civilian personnel for tuberculosis and syphilis has been initiated in conjunction with the District of Columbia Tuberculosis Association and District of Columbia Health Department. There were 68 persons with positive serologic reactions for syphilis in the June 1954 survey. The chest-film follow up statistics were not completed.

18 *Center activities* The health nurse serves in an advisory capacity to the Center's nursery. The health nurse confers with chiefs of services and attends professional conferences on the same basis as social service workers and psychologists.

19 *Liaison maintained* Contacts which result in additional services for our patients are maintained with the District of Columbia Health Department, U S Public Health Service, District of Columbia Visiting Nurse Association and Visiting Nurse Association of adjacent areas, Montgomery County Health Department, and United Community Service.

PROGRAMS PLANNED AND UNDERWAY

Programs planned and underway are:

1 Home Care Program—to be extended to include all services of the hospital.

2 Diabetic Education Program—individual and group instruction.

3 Arthritic Education Program—individual and group instruction.

4 Mental Hygiene Program—to be started by the Neuropsychiatric Department in the form of child study groups.

5 A Child Development Service—to present a series of seven films on "Child Development" during the lunch hour film program.

6 Research in the study of prenatal influences as they relate to the mental stability of the child has been added to the Health Nurse Program in conjunction with personnel from the National Institutes of Health.

SUMMARY

The Army health nurse is a valuable asset to patient care. The services performed or offered are limited by the personnel and facilities available. The outline of the organization and the pro-

gram of the Army health nursing service at Walter Reed Army Medical Center serves only to show the potential service available. The pattern of service used is unimportant, but it must embrace the essential elements of a sound preventive medicine program, which is equally important at Army Class I, II, and III installations. This program not only saves the physicians' time and reduces the number of patient hospital days but also supplies nursing service and health education. The health nursing service is centered in the outpatient service as a focus of operation.

THE MAGIC T I D

An example of the survival of magic in the medical routine of today is the ritual of giving drugs three or four times a day. This ritual, as a Swedish psychiatrist, Ada Glynn, commented on not long ago, has been handed down to us from the time of primitive medical magic. For the medical historian, this custom of giving drugs three or four times daily is associated with primitive belief in the power of certain mystic numbers. The ancient Egyptians believed in a four day cure. On the island of Eddystone, every form of therapy lasts four days and sometimes is repeated for four days every month for four consecutive months.

If we were to study pharmacologically the advisability of giving certain drugs three or four times a day and take into consideration the duration of the effect of each dose, we should see with surprise that in many cases there would be an overdosage and in others an underdosage, entailing in either case a great risk. Just the same, physicians continue to follow the practice of the three daily doses.

The administration of a drug is maintained within a certain margin of therapeutic dosage. But patients with totally different constitutions are given exactly the same dose. If the desired effect is not achieved, another drug is tried when actually what should be done is to determine the correct dosage required by each patient before deciding—in cases of poor toleration—that it should be discarded. The magical formula of *t. i. d.* regardless of the patient's capacity to absorb or excrete the drug, sometimes makes the patient intolerant to drugs administered at short intervals.

—FELIX MARTI IBANEZ, M. D.

in A. J. J. C. M. J. C. M.

p. 406 July 1955

recorded temperature was 6 C Furthermore no hemolyzed blood was reported during the month of September from any of the other three participating activities

SUMMARY

The Blood Donor Center at the U S Naval Hospital San Diego Calif has been supplying whole preserved blood to all naval activities of the Eleventh Naval District The results show that it is practical and economical in the military service for one large donor center having an adequate supply of donors available to draw and process the blood requirements for the entire district The blood can be transported a considerable distance by automobile with a minimum loss of quality due to hemolysis of the red blood cells

EVACUATION BY HELICOPTER

In the recent Korean campaign the lesson of which is being studied here and in the U S A evacuation has been further speeded and eased by means of helicopter which have proved far superior to the stretcher jeep and mule Evacuation by this method has no doubt been one reason for the remarkably low death rate of the American wounded (2 to 3 percent compared with 4 to 5 percent in the second world war) and the U S Army Medical Service has decided to include the helicopter ambulance unit as an integral part of its full organization The helicopter however is useful only in suitable weather and as in Korea with undisputed mastery of the air—conditions that will not necessarily prevail again

—EDITORIAL

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p 400 F b 20 1954

MILITARY MEDICINE IN PEACETIME

Some Unusual Cases

JOHN CONLEY *Lieutenant (MC) USNR*

GEORGE G GRAHAM *Lieutenant (MC) USNR*

RALPH E HAYNES *Lieutenant (MC) USNR*

MOR J MCCARTHY *Sr Lieutenant (MC) USAR*

IN VIEW of the rather widely held opinion that medical services in the field have little or no medical work of value to do following cessation of hostilities, the following case reports are presented in refutation. These cases were all handled successfully entirely within the Western Pacific field installations of the First Marine Division's Medical Battalion.

CASE REPORTS

Case 1 A 24 year-old Korean man complained of weakness and numbness of both legs. For 4 months he had noted progressive weakness and loss of sensation in both legs with loss of bladder and rectum control. His gait became unsteady, finally resulting in an inability to walk. During the same period he also had noted moderate shortness of breath and a frequent cough productive of foul smelling sputum. One month before onset he had been treated for pleurisy; peritonitis had been suspected 6 months earlier.

Physical examination revealed some distention of the abdomen with a moderately enlarged liver. Neurologic examination showed a spastic paraplegia with loss of tactile sensation in both legs. The rectal tone was poor. Laboratory studies revealed normal blood and urine. The stool was positive for ascarides and *Trichuris trichiura*. A roentgenogram of the chest showed pneumonic infiltrate in both right and left midfields of the lungs. Myelitis at the level of T4 cause undetermined was suspected.

A laminectomy was performed on 23 October 1953 at the level of T4. In the epidural space centered in the midline was a granulomatous mass with a center consisting of black oily liquid; this granuloma was excised. Numerous cysts of *Paragonimus westermani* were found.

Four days postoperatively a pleural effusion developed that proved to be sterile. Recovery was uneventful. 2½ months after operation there was return of sphincter function, motor power, and sensation, and the patient was able to walk without difficulty.

From Medical Battalion 1st Marine Division (Reinforced) FMF Pacific, FPO San Francisco, Calif. Discharged 11111 N Broadway, Santa Ana, Calif.

Case 2 A 13 year old Korean boy sustained an injury from a bicycle chain 3 weeks prior to admission. The injury was a small abraded area on the heel which was not cleansed or dressed. Five days before admission he developed pain about the face, neck and abdomen and began to have difficulty swallowing. For 4 days he had convulsions and increasing trismus. He was then treated by a Korean doctor being given three injections but failed to improve.

Physical examination revealed a well developed and well nourished Korean boy who appeared acutely ill. Temperature was 100.2 F, pulse 120 per min. and blood pressure 110/60 mm Hg. The child's face was flushed, he was unable to open his mouth and the upper lip was tightly drawn over the upper teeth giving the appearance of typical risus sardonicus. The neck and abdomen were rigid, all muscle groups were spasmotic and opisthotonos was evident. The patient was conscious but highly excitable. He was then having recurrent contractions of various muscle groups but no true convulsions. The skin was covered with general urticaria which had developed after the injections given before admission. The remainder of the examination was negative except for a dirty ulcer about 4 by 4 cm on the lateral part of the left heel. The left inguinal lymph node was enlarged and tender.

The patient was admitted with diagnosis of tetanus. Laboratory studies showed the red blood cell count to be 2.26 per cu mm and the hemoglobin to be 64 mg or 9.5 g per 100 ml. The white blood cell count was 6,550 per cu mm with a normal differential. Findings of urinalysis were within normal limits. A lumbar tap revealed the spinal fluid to be crystal clear with normal dynamics; there were no red blood cells and 6 white blood cells. Sugar was 82.5 mg, protein 20 mg and chlorides 725.4 mg all per 100 ml.

The patient was given a sedative. The wound was widely excised and debrided and continuous hydrogen peroxide packs were started. Crystalline penicillin 180 mg (300,000 units) were given every 2 hours and intravenous infusions were started. Because a skin test with horse serum was strongly positive the patient was given 50 mg of cortone (brand of cortisone acetate) intramuscularly and was slowly desensitized. He was then slowly given 40,000 units of tetanus antitoxin intravenously without any untoward reaction. After the intravenous infusions the patient seemed to be improved although his condition remained critical. The following day he appeared to be definitely improved although the accumulation of thick mucous secretions in the pharynx remained a problem and on two occasions almost necessitated a tracheotomy. Improvement was gradual but steady. The muscular spasm and rigidity began to subside slowly but the patient developed bilateral complete paralysis of the extensor muscles of the forearm which slowly improved. Twenty-three days after admission the patient was in good general condition and it was believed that the paralysis would completely subside.

Case 3 A 52 year old Korean woman was admitted on 8 August 1953 complaining of an enlarging abdomen and a mass in the right flank of 4 months duration Dull intermittent pain had been noted for 2 months Other symptoms such as abnormal bowel habits weight loss and excess fatigability were denied as well as any other complaints The past history was noncontributory and a family history was not obtained A review of systems other than that described in the present complaint was negative More than a year earlier the patient had noted worms in her stools but had paid no attention to stools since that time

Physical examination was essentially negative except for the following findings A large firm mass 10 cm in diameter was palpable in the left hypochondrium This extended to the costal margin superiorly and to the midlumbar region inferiorly and laterally the upper border disappeared beneath the costal margin and could not be palpated The mass did not move with respiration but on palpation could be moved through a very limited range (less than 1 cm) No other intra abdominal masses or organs were palpable There was only minimal tenderness over the mass on deep palpations No lymphadenopathy was found in the usual areas examined No hernias were present A clinical impression of carcinoma of the descending colon was formed

An operation was performed 10 days after admission The large mass was found to be in the abdominal wall penetrating through and completely adherent to the splenic flexure of the colon A wide resection of the abdominal wall was carried out including the 11th and 12th ribs and a portion of the diaphragm the splenic flexure of the colon was widely resected and an end to end anastomosis performed Complete abdominal exploration failed to reveal any further intra abdominal abnormality The abdominal wall and diaphragm were closed—the former by swing flaps of the anterior rectus sheath No attempt was made to approximate the peritoneum because it had been widely dissected and removed Steel wire sutures further closed the defect The patient received 1 000 ml of whole blood during the procedure Her postoperative convalescence was sustained without incident She was discharged 2½ weeks later and followed up at the outpatient clinic Subsequent postoperative barium enema roentgen studies have been negative and to date the patient is well and uncomplaining Microscopic examination of sections of the removed tissue revealed a desmoid tumor which was intimately attached to the colon

Case 4 At 0330 hours on 17 October 1953 this 17 year old man was shot with an M 1 rifle When brought to E Medical Company at 0400 hours examination revealed a compound comminuted supracondylar fracture of the right humerus and what appeared to be a superficial wound of the right flank region He was not in shock blood pressure and pulse were stable and there was no evidence of artery or nerve involvement A roentgenogram of the chest was essentially normal A roentgenogram of the right arm confirmed the gross findings

Under brachial block the arm was debrided the triceps tendon sutured and a pin placed through the medial condyle. When the patient was rolled on his left side the right arm was elevated for debridement of the flank wound the characteristic sounds of a sucking type chest wound were heard. The entrance wound was located at the right paravertebral margin in the 12th interspace and the exit wound at the 10th interspace at the anterior axillary level. The wound edges were infiltrated with 1 percent novocain (brand of procaine hydrochloride) the 10th rib was exposed and a 4 inch section removed. Examination revealed that the upper third of the right kidney and the lateral sixth of the right lobe of the liver had been destroyed and there was a rent in the right diaphragm measuring about 2 cm in length.

In spite of the opening of the right thorax the patient's condition remained stable. He was given 75 mg of demerol (brand of meperidine hydrochloride) intravenously and the surrounding tissue of the wound were infiltrated with 1 percent novocain. The distal third of the right kidney was resected and the capsule closed with interrupted sutures of 000 chromic. The involved portion of the liver was resected and and bleeding controlled with mattress sutures of 0 chromic. Examination of the lung revealed only a contused right lower lobe. A chest tube was inserted through a stab wound in the intercostal seventh interspace and connected to underwater drain. The diaphragm was closed with interrupted sutures of 00 silk. The intercostal muscles were closed over the right pleural defect. Drains to the upper hepatic area and right kidney were brought out through an epidiaphragmatic stab wound in the right flank. The right arm was placed in a right angle splint. The patient's blood pressure pulse and respiration remained stable throughout the operation.

A small amount of blood drained through the flank wound for the first 2 postoperative days. A roentgenogram of the chest taken on the second postoperative day showed the right lung almost completely expanded and the right diaphragm in normal position. On the fourth postoperative day secondary closure of the wound was done. Subsequently all routine laboratory examinations were within normal limits and the patient was in excellent condition.

This case was thought to be somewhat unusual in that a rather extensive wound of the right flank involving the kidney liver and lung was masked by the musculature of the thoracic cage keeping the wound sealed until the arm was elevated. Secondly it demonstrated the type of major operation that could be accomplished under local anesthesia which while not advocated was adequate under the circumstances.

SUMMARY

Four unusual cases were observed as part of the day-to-day professional care given by a Marine Division Medical Battalion in peacetime. These included paragonimiasis tetanus desmoid tumor and an unusual flank wound. This is only a small sample of a diagnostically and therapeutically challenging practice.



Clinicopathologic Conference

U S Air Force Hospital Wright Patterson Air Force Base Ohio*

DECOMPRESSION SICKNESS

[In view of the interest in this unusual case the customary style of a clinicopathologic conference has been changed to a modified panel discussion.]

Summary of Clinical History At 0825 hours on 19 March 1954, a 34-year old obese Army officer was admitted by ambulance from the flight line with acute semicoma and left hemiplegia. Weighing 250 pounds and 5 feet 11 inches tall, the officer flew as a passenger in a T 33 jet aircraft leaving Langley Air Force Base for O Hare Air Force Base. The patient had been briefed concerning the oxygen system and other safety devices in the aircraft. There was no preoxygenation prior to take off. Take off and climb to 5,000 feet were executed on 100 percent oxygen. At this altitude the oxygen was turned back to "normal" system. Climb to 35,000 feet on course was accomplished by 0845 hours. The pressurized cabin altitude at this time was 26,000 feet. The pilot checked his passenger frequently and received lucid verbal responses until arrival over Wright-Patterson Air Force Base at 1005 hours, where the pilot had to change course and altitude. Ascent to 39,500 feet (cabin altitude 29,000 feet) above the clouds was completed in 3½ minutes, at which time the pilot noticed that the throttle was jammed and asked his passenger to check it on the rear instrument panel. The officer replied that it was all right, but complained of numbness on the left side and coldness. He was advised to loosen his harness, turn the oxygen to 100 percent, and check the pressure parts. The patient replied he could not see the last-named even though told where they were. On further questioning it became evident to the pilot that his passenger was becoming progressively more incoherent.

These events occupied about 2 minutes at a cabin altitude of 29,000 feet. The pilot called a May Day emergency and started

Col Herbert W. Co. USAF (MC) Command Flight Medical Section C-1
Co-Chief

down reaching 10 000 feet in less than 5 minutes and landing in a total of 20 minutes from the time of onset of his passenger's symptoms. On landing the patient was unconscious and evidently had been so for some time because the pilot could feel the man's weight on the controls. The onset could therefore be placed roughly between the time of "jamming" of the throttle and loosening of the patient's harness. On landing oxygen equipment and cabin pressurization were checked and found to be in good operating order.

Recapitulating the time element. The patient was taken to a 26 000 feet cabin altitude in 20 minutes and ascended to 29 000 feet cabin altitude over a 3¹/₂ minute period. Exposure at this altitude for 2 minutes coincided with incoherence numbness visual disturbance and loss of consciousness. Return to 10 000 feet was accomplished within 5 minutes and landing in 20 minutes after onset of symptoms.

Physical Examination. The pilot the corpsman and the ambulance physician described a red livid obese semicomatose white male who exhibited right-sided convulsive movements in the ambulance but a flaccid paralysis of upper and lower left extremities. The patient was extremely restless and required restraint. Blood pressure was 180/120 mm Hg pulse 130 per minute respirations 40 to 50 per minute. On the ward blood pressure fell to 130/90 mm Hg. Pupils of the eyes were regular equal and markedly dilated (to about 7 mm) fundi were normal with no papilledema. Tonus of cervical muscle was subnormal. There was tachypnea with pronounced abdominal excursions but no positive findings in the lungs. There were no heart murmurs and regular tachycardia was present. The back and extremities showed no signs of trauma. The head and thorax were similarly free from gross signs of injury. Neurologic examination showed flaccid left-sided paralysis right-sided hyperreflexia and hypertonicity. The Babinski sign was not elicited. No other localizing neurologic signs emerged.

Laboratory Studies. Examination of cerebrospinal fluid revealed an initial pressure of 112 mm of water no block was demonstrated. Fluid was crystal clear and contained 4 neutrophils per cu mm and a total protein of 90 mg per 100 ml. The serologic test for syphilis was negative.

Course in Hospital. Initial clinical impression was to rule out ruptured cerebral aneurysm but air embolism decompression disease was suspected. Immediately on admission to the ward the patient was placed on oxygen by mask. Because he was breathing so rapidly that there was some rebreathing and incomplete filling this was changed to oxygen by nasal catheter. Spinal fluid pressure rose with pressure on either jugular vein and fell

rapidly on release. The anesthesiologist attempted stellate block on the right, which did not produce a Horner's syndrome but somewhat increased warmth of the right upper extremity.

On neurologic re examination, the superficial abdominal and cremasteric reflexes were unelicitable, and the tonus of the extremities of the right were decreased. The consulting neurologist was telephoned, but in view of lack of a greater degree of localization did not recommend further immediate treatment.

The patient developed a pronounced terminal respiratory tract exudate requiring aspiration, and developed a peripheral vasomotor collapse with blood pressure of 0/0, bluish mottling of skin due to stasis and imperceptible pulse. Intravenous levophed (brand of levarterenol bitartrate) made with a 16 ml solution in 1 liter was given with no significant response and the patient died at 1555 hours—4 hours and 55 minutes after admission to the ward and about 5 hours and 25 minutes after onset. Total dose of levophed received before death was 8 ml.

DISCUSSION

Docto Mo sh II When a patient presents symptoms such as these after an airplane ride the number of things that we can reasonably consider are actually very limited. I am sure that there are a number of things that you could bring up that are on the back page of the text books. However if you are going to find the most reasonable causes I think that intracranial hemorrhage of one type could be the most likely thing other than decompression sickness to consider. I think this is pretty well ruled out by the fact that the man had no meningismus he had a normal spinal fluid pressure. The spinal fluid was clear and there was no papilledema. I am sure that I am working too much towards bends—I can't give a fair differential diagnosis. Maybe someone else would like to say a few words about the differential diagnosis.

D to Coow y You might wonder whether the altitude of the cockpit which was 26 000 feet for 1 hour and 20 minutes would be sufficient to cause decompression sickness. I know of only one case of decompression sickness on record that occurred at an altitude of 26 000 feet. This case will be the second as the altitude was the same except for that brief interval when the pilot went to a cabin altitude of 29 000 feet. When he went to 29 000 feet it did not take but a very few moments for severe symptoms to ensue in the patient. I think that the differential diagnosis in the hospital of ruptured aneurysm of the circle of Willis vs decompression sickness was good. At the time Doctor Coone saw the patient he reversed the order which was also quite proper because

Mr J Chai B Ma hall J USAF (MC) Resident A lat M d i n
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he then had a clear spinal fluid to his advantage. Decompression sickness was now the preferred diagnosis and some intracranial hemorrhage from whatever cause the alternative. There are some rare differentials and I think syphilis should also be mentioned. This seems a remote possibility in this case. The man was young with no evidence of vascular lesions. He was an Army officer and subject to frequent serologic testing.

D r J h t: What do you think of the possibilities of a pheochromocytoma or islet cell adenoma of the tail of the pancreas for instance. These should represent an academic brace of possibilities in the differential diagnosis.

D r D w y: I think pheochromocytoma is a good possibility. I'm surprised we have left it to the pathologist to suggest that one. You remember that his blood pressure was 180/120 mm Hg—way up in the abnormal range—as a matter of fact high for decompression sickness. There is a blood pressure rise but usually of the order of 150 to 160 mm Hg systolic and something well below 120 mm Hg diastolic. I don't think I know of any other that went to 120 except one other case that was a duplicate of this case and that happened on 25 January 1953. A colonel in the Air Force was also a passenger in the back seat of a T-33 jet aircraft and was in transit less than 4 hours. I don't know where the flight was to but over Alexandria he developed cerebral symptoms and actually looked a great deal like this—had a hemiparesis. The pilot realized that the man was in difficulty and landed immediately. They got him to the hospital where he promptly died very much like this patient and autopsy also showed air embolism. There are perhaps only two cases other than this third man that I know something about, so I don't think decompression sickness stands as the initial diagnosis when we know of only three cases. There are more cases in the literature.

D r J h t: To summarize the gross autopsy findings which I am now going to illustrate. This man's far as we could see at the autopsy table had pulmonary edema and congestion that caused his lungs to weigh 1,000 grams when about 500 to 600 grams would have been a reasonable weight. His heart weighed 325 grams well within the normal limits and showed no gross abnormalities except for two lesions. The first was a small atheromatous plaque of a margin 1 branch of the left coronary artery causing about 60 percent occlusion. As far as we could judge anatomic ally there was quite a great deal of collateral circulation about this plaque so I do not think that it played a significant part in the patient's death. The second abnormality was a patent valved foramen ovale. It had an opening that approximated 1.5 cm on the left side of the heart against which the valve was oriented. There was congestion of the liver and spleen. The remainder of the gross autopsy was not remarkable. The autopsy performed about 1 hour after death, was carried out entirely under water. We had the fanciful hope of being

able by this means to demonstrate intravascular or interstitial gas bubbles but this proved to be entirely in vain. There were no gross lesions on section of the brain. Microscopically however numerous ischemic foci which I will demonstrate were found in the anterior commissure the septum pellucidum head of the caudate nucleus basilar portion of the pons and the cerebellum as well as a number in the cerebral cortex. A few perivascular petechiae were also demonstrable in some of these areas. There were conspicuous perivascular hemorrhages in the floor of the fourth ventricle at the midpontile level. All of the important work in establishing the diagnosis of this autopsy was done in Washington by Doctor Webb Haymaker of the Armed Forces Institute of Pathology. Nerve cells and myelin sheaths suffered greatly in the areas of injury. There were lymphocytic foci of inflammatory reaction in the pars basilaris pontis.

We did not remove the entire spinal cord however the cervical portion of the spinal cord was available for study and you can see that there is an almost explosive injury to myelin sheaths and ganglion cells in the ventral horn (figs 1 and 2). The lesions in the cerebellum and cerebral cortex are illustrated in figures 3 through 5. In addition we found numerous fat emboli in the lung (fig 6) and a few scattered fat emboli in the brain (fig 7).

Now you might ask why stain these tissues for fat? We did so because we thought of intracellular gas bubbles in fat (and our particular preference is the bone marrow) that rupture cells on expansion and release their contents into the sinusoids surrounding the fat cells in bone marrow. They could be transported thence to the lungs and through the patent foramen ovale into the brain. The alternative possibility that fat emboli could filter through the lungs is supported by the fact that only two fat emboli were found in many sections of the brain. As to the pathogenesis of the ischemic foci in the brain, we envision these to be the result of intravascular gas emboli combined with vasospasm. We have no simple explanation for the vasomotor phenomena in this patient—hypertension followed by shock—nor of mydriasis tachycardia and tachypnea. We would like to relegate these to the province of the physiologist. If there aren't any questions about the pathologic findings I shall ask Doctor Schwarz to proceed with an explanation of the bubble formation.

Do to Schwarz. The pathologic findings of the case presented to us suggest a diagnosis of intravascular fat emboli in the absence of gross body trauma. We must ask ourselves the origin of such fat emboli. Rupture of fat cells presumably secondary to the formation and extension of large bubbles within the cell seems the most probable mechanism. We should therefore concern ourselves with two questions: (1) The origin of intracellular gas bubbles as a complication of high-altitude flight and (2) the reasons that bubbles occur primarily in fat tissues.

First Lt. Martin J. Schwarz, USAF (MC), Physiology Branch, Aerospace Medicine Laboratory.

Bubble formation represents a process by which gases in supersaturated solution within the cells may enter the gaseous phase. From the physical standpoint we must differentiate two processes—one of bubble formation the other of bubble expansion. It is a well known physical phenomenon that gases may exist in supersaturated solution until some stimulus or nucleus for bubble formation is found into which the gases can rapidly diffuse.

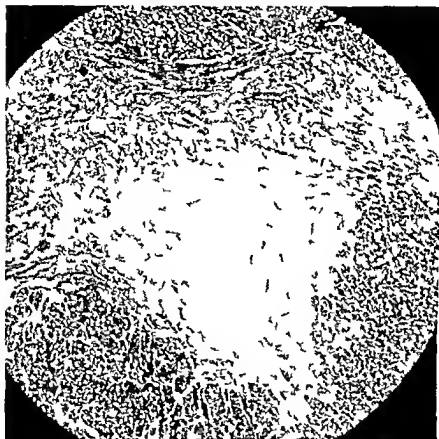


Figure 1. Ducts of a vertebral body of superior cervical segment of spinal cord. The significance of this change is uncertain. There is little as occluded hemorrhage. The lesion was bilateral at this level (Little et al., ×45).

Now what is the mechanism of supersaturation? The answer lies in the difference in the partial pressures of inert gases in the biologic system as one ascends. The biologic elimination systems, namely the circulation and the lungs, are unable to eliminate the body's nitrogen stores at a sufficiently rapid rate to keep pace with the decrease in partial pressure of nitrogen in the surrounding atmosphere as one ascends in modern flight. The result is that the person who rapidly ascends to high altitude may find his tissues supersaturated with nitrogen when compared to the surrounding atmosphere. It is this difference in pressure which is responsible for the initiation of bubble

It would appear that we may divide the body into several apparent segments physiologically speaking. The lungs are in active contact with the outside atmosphere and thus rapidly give up their nitrogen. There is almost no lag of any alveolar nitrogen content with respect to the outside atmosphere regardless of the rapidity with which one ascends. The aqueous circulatory system appears to lag only slightly behind the lungs. Presumably any area of the body adequately perfused by the circulatory system should be capable of giving up its quota of



Figure 2 Higher magnification of area from figure 1 showing distended and ruptured myelin sheaths. Axon swelling was also demonstrated by Bodian stain. Ventral horn cell in upper right portion of the field (Lillie stain $\times 250$)

inert gas with a relatively small lag. There are, however, certain areas of the body which have relatively poor circulation and therefore do not have free exchange of dissolved nitrogen with the nitrogen of blood. The most significant example of this is fat tissue.¹ Nitrogen is far more soluble in the lipid system than in the aqueous. A considerable volume of literature shows that there is approximately five times as great a solubility of nitrogen in fat as in the aqueous system. The literature further indicates^{2,3} that fat tissues of the body consequently give up their nitrogen extremely slowly.⁴

The end result is that the individual who ascends, as this Army captain did, may build up large amounts of nitrogen storage in the fatty tissues. The greater the amounts of fatty tissue in the body in proportion to other tissues, the greater the degree to which this can occur. If such supersaturation becomes sufficiently great and the conditions

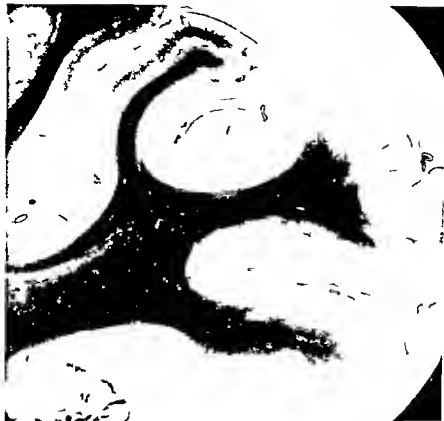


Figure 3. Ischemic area of cerebellum. Not well seen as focal tract of granular layer. The latter is intact for a mild but distinct in the upper left portion of the field (Lillie stain, $\times 48$).



Figure 4. Foci of demyelination and ischemic damage in cerebellum involving gray and white matter (Lillie stain, $\times 27$).

are possible for bubble formation bubbles may occur within those cells that are the most supersaturated namely the fat cells

Considerable work has been done in this problem of nitrogen elimination, and rather complex curves of elimination rates have been obtained



Figure 5 Ischemic changes in cerebral cortex. No laminar distribution of lesions was observed such as might argue anoxic pathogenesis (Lillie stain, $\times 8$)

These tend to show that nitrogen is not eliminated according to a single exponential term as might be expected if one were dealing with a single simple system (all parts of which are in equilibrium with each other and in which nitrogen leaving the system is independent of the

actual amount of nitrogen present but at any given instant is a function of the total amount present) Rather than such a simple relationship it appears that the body elimination curves that have been found do support the concept that the body consists of several systems each of which is in contact with the other. There is some lag of exchange. The end result is that most descriptions of the body's elimination of nitrogen consist of several exponential terms.

I hope this brief summary conveys to you some of the principal concepts involved. For those who are interested in this extremely important problem in modern aviation medicine I would like to refer you to an excellent complete and relatively non-technical report dealing with the subject of decompression sickness. This report is published under the auspices of the National Research Council under the editorship of the committee headed by Dr. John Fulton. I would like to close by pointing out that this problem of tissue supersaturation with gases, bubble formation, bends and related syndromes is one of considerable significance to those of us working in the field of high-altitude flight and physiology. We may rightfully anticipate that it will become more and more a technical problem faced by armed services personnel the world over as high-altitude aircraft become more and more commonplace.

Mr. D. A. R. b. m. Since we seem to be pointing to the idea that bends was the cause of this man's death it might be right at this time to enumerate some of the common and accepted symptoms of bends. The first symptom of bends is deep pain particularly in the shoulders and knees and then in other joints. Choke, myositis which is a chest pain, difficulty in breathing and a subjective sensation of burning in the lung and uncontrolled coughing. There may be blurred vision and the patient may have blind spots. Paralysis is possible as is loss of consciousness either dependent on or independent of the pain from the bends area. So with this short list of symptoms I would like to talk on the environmental and constitutional factors that play a part in bends. I am taking this from a report by Moseley and associates who examined the training records of some 68,000 trainees during the last war. Under environmental factors they found that the time of the day played part in the incidence of bends. The earlier in the day the greater the incidence of bends. As the day progressed the incidence of bends decreased. There was no correlation with the day of the week, the month or the year. The temperature of the chamber definitely had an influence on the occurrence of bends—the colder the temperature the more frequent the occurrence of bends. As for anoxia—quite often we think that perhaps anoxia or hypoxia may be associated with bends. There is no correlation between hypoxia and bends. In those individuals studied who deliberately were made hypoxic the incidence of bends was no greater than in those who were adequately oxygenated. Now some of the constitutional factors. Certainly the taller the man the greater his susceptibility to bends. Height of the individual yes—the



Figure 6 Fat embol in pulmonary arteries (Oil red O stain, $\times 130$)

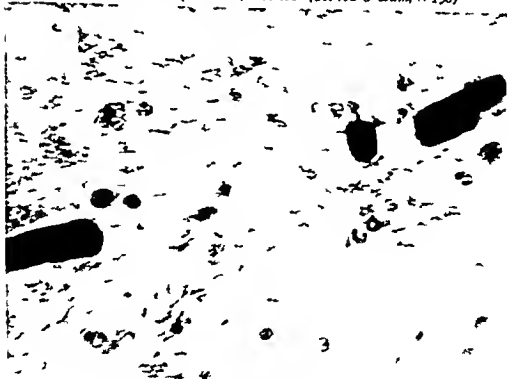


Figure 7 Fat emboli in cerebral vessels (Oil & A (144 x / 111)

taller the individual the greater the susceptibility to bends. However this is probably due to the fact that a taller individual is also heavier. Weight is definitely—the heavier the individual the greater the susceptibility to bends and the more severe the bends. Weight by itself however is a poor yardstick to use. They use here linear density that is height in inches compared to weight in pounds. We are suggesting in our laboratory the use of specific gravity that is the amount of fat to body weight ratio as a test.

Now what are the ways of reducing or preventing bends? First of all there is cabin pressurization. Doctor Downey and I have evidently tested different persons. Henry of the University of California in 1953 showed that mild bends will occur at 24 000 feet moderate at 28 000 feet and severe at 31 000 feet. Therefore there is a very good possibility of bends occurring at 24 000 feet. If the cabin pressurization is below 24 000 feet we should get little or no bends. That is an aircraft problem. Preselection is definitely a medical problem. We have suggested to the Surgeon General's office several items to be included in the physical examination for pressure-suit training for individuals wearing the T-1 or S-2 altitude suit. First of all we suggested a complete medical history—that is of both parent and of the individual—and a psychiatric examination and history that should elicit particularly the man feels about whether he wants to fly to 50 000 feet and whether he wants to wear an altitude suit for several hours or not. Second a rigid physical examination is necessary. It should be pointed out to the physician in charge why this physical is so important to the individual and it should be a separate examination, not a routine one. The weight especially should be checked—that is the specific gravity of the individual the amount of fat to body weight ratio. We would suggest roentgenograms of the chest particularly noting heart size and a y-f-t-d position and around the heart. We would like an electrocardiogram. If there is any abnormality or suggestion of abnormality cardiovascular tests should be used. If any abnormalities show up no altitude training should be given that individual.

Preoxygenation is probably the one most commonly used in the Air Force—that is prebreath 100 percent oxygen before ascent to altitude in an attempt to wash out the nitrogen in the body. Studies have been made to show that there is a break in the nitrogen elimination curve in 1 to 1½ hours. In recent tests we have found that 1 to 1½ hours is the optimum. We have been using 2 hours of preoxygenation before any ascent to altitude above 43 000 feet and we have found that that eliminates bends almost completely. The T-1 altitude suit is devised primarily to protect against hypoxia. It will give the individual a 1 to 2 000 foot higher altitude before the onset of bends probably because of the pressures reserved by the suit itself but that does not mean that the man who does not get bends at 31 000 feet can put on the pressure suit and go to 33 000 feet.

COMMENT

The possibility that anoxia might be responsible for the lesions seen in the brain is considered to be well ruled out by both clinical and pathologic observations. There was no cyanosis during continuous observation. The oxygenation system of the aircraft was thoroughly checked as well as all equipment such as oxygen mask, et cetera, and reports indicate that these were in good order. The pilot experienced no symptoms. Fat embolization has not been reported in association with fatalities from decompression sickness. There is no record of its being searched for. Fat embolization has, however, been demonstrated in six or seven persons dying from decompression to altitude in decompression chambers.

Further discussion with the physiologist indicated the line of thought that vasomotor phenomena observed in these cases might be the result of "vasovagal reflexes." Experimental work in the Aeromedical Laboratory of Wright-Patterson Field tends to support this suggestion. Preoxygenation of dogs subjected to high altitude decompression has resulted in an encouraging diminution of these manifestations. This work is soon to be published. As aircrafts fly over higher, the problems of decompression sickness in relation to susceptibility, prophylaxis, and treatment will become of increasing importance. It is in the hope of exciting interest and calling attention to these problems that this case has been presented.

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CASE REPORTS

Echinococcus Disease in an American Veteran

SAMUEL ZELMAN M D

ECHINOCOCCUS infection is rarely seen in the United States except in the foreign born from endemic regions chiefly the Mediterranean area South America and New Zealand. It is acquired by ingestion of food contaminated with dog feces containing the ova of the dog tapeworm *Echinococcus granulosus*. The dog acquires infection by eating the infected liver or other tissues of the intermediate host most often sheep in which encysted scolices are present. Cysts are of slow growth over many years and occur most commonly in the liver (65 per cent of cases) but have been described in many organs. The right lobe of the liver is involved 85 percent of the time. Hypersensitivity to cyst fluid is characteristic of the disease and fatal anaphylactic shock may follow intraperitoneal rupture of the cyst. This hypersensitivity is employed diagnostically in the antigen skin test and the complement fixation test. Eosinophilia is said to occur after escape of any fluid from the cyst and is found in 25 percent of patients.

The case here reported occurred in a veteran of World War II who has not been outside the United States except for his overseas service in North Africa Sicily and Italy. He landed at Oran North Africa on 2 November 1942. About 6 months later he and six or seven other men of the 688th Airborne Infantry Division cleaned out and occupied for a period of 2 months a barn which had housed sheep near Constantine North Africa. The area was one given over to grazing sheep together with shepherds and sheep dogs. The men kept no dog.

CASE REPORT

A 40-year-old laborer was admitted to this hospital on 1 June 1955 complaining of increasing epigastric pressure and aching worse after meals with occasional nausea and vomiting of more than 1 year's duration accompanied by a weight loss of 14 pounds. He had been hospitalized the previous autumn because of nervousness characterized as tension irritability restlessness and inability to hold a job and had been diagnosed as having chronic paranoid schizophrenia. During this hospitalization, he had complained repeatedly of right upper-quadrant aching because of which roentgenographic studies of the gallbladder and colon had been done but were unrevealing.

From Veterans Administration Hospital, Tampa, K.

The past history included spinal meningitis at the age of 7. The patient had served in the Army Airborne Infantry as a private first class from December 1941 to September 1945 with service overseas in North Africa, Sicily, and Italy. He had not otherwise been outside this country. During the year 1944 while in Italy he had been repeatedly hospitalized for pyodermas and abdominal complaints with admission diagnoses that included possible duodenal ulcer, gastritis, cholecystitis, lead poisoning, and hysteria, but none of these were substantiated. A transient hemiplegia occurred which may have been hysterical. Latent syphilis was diagnosed by serologic test in 1942 and asymptomatic neurosyphilis by spinal fluid test in 1945, after which the patient was given penicillin and malaria therapy and a disability discharge for psycho-neurosis, anxiety reaction.

In 1951 while working at an ammunition plant the patient was struck on the head by a shell box sustaining a skull fracture and found unconscious. He was treated at home in bed for 42 days. On the first day out of bed he developed right hemiplegia for which he was taken to the hospital and a blood clot evacuated through a burr hole of the left parietal region of the skull. The paralysis gradually cleared over the next 4 months. This was the only hospitalization between 1945 and 1954.

Examination revealed a rounded, firm, smooth, tender mass in the epigastrium extending nearly to the umbilicus. A flat percussion note was elicited over the mass. The right lobe of the liver was separately palpable at the right costal margin. Examination of blood, urine, and stool specimens revealed no abnormalities. The blood serologic tests for syphilis were weakly positive. The cephalin-cholesterol flocculation and zinc turbidity tests of the serum were normal, but the thymol turbidity was slightly elevated (5.2 units). Bromsulphalein (sulfobromophthalein sodium) retention at 45 minutes (5 mg per kg) was 36 per cent. Roentgenograms of the digestive tract revealed a large, rounded, cystlike mass in the epigastrium anterior to the stomach and depressing both stomach and colon (figs. 1 and 2). The shadow of this mass could also be identified in the roentgenograms of the gallbladder area taken the previous year. Intravenous pyelograms proved negative for polycystic disease.

Believing the mass to represent either an enlarged left lobe of the liver or a mesenteric or liver cyst, and not having considered the possibility of hydatid cyst, I attempted diagnostic needle aspiration on 20 June. Clear, watery fluid spurted through the needle under considerable pressure. A liter of fluid was aspirated. The later portions of the fluid showed evidence of freshly admixed blood in small amount, presumably a result of rapid change in pressure. The patient experienced immediate relief of the sense of epigastric pressure. Only the first fluid aspirated was sent to the laboratory because hydatid cyst was not yet suspected. No scolices or hooklets were found in that specimen of

fluid which was reported to have a specific gravity of 1.001 and a protein content of 5 mg per 100 ml. No growth was obtained on culture.



Figure 1. Epigastric mass. Left lobe of liver. Post-aspiration view. The fluid layering is evident after the patient is tilted to the left. The fluid layering is evident after the patient is tilted to the left. The fluid layering is evident after the patient is tilted to the left.

A few hours after the needle aspiration, the patient complained of lower substernal pain which was relieved by elevating the head of the bed. During the next 48 hours he had fever, tachycardia, and leukocytosis. There were anorexia and abdominal fullness with tympany over the abdomen and tenderness of the right side of the abdomen but no dullness to percussion and no fluid waves. At the peak of this reaction there was some muscle resistance in the right lower quadrant. Peristalsis continued normally. The temperature course consisted of gradual rise to 102.4 F about 24 hours after aspiration, with gradual defervescence during the second day. Serum amylase determination and roentgenograms of the chest and abdomen taken with the patient in the supine and standing positions revealed no cause for restriction. The patient appeared much less ill than would have been justified by the fever and leukocytosis and abdominal findings were minimal. The leukocyte count on 21 June was 16,500 per cu mm with 95 percent granulocytes including 7 percent nonsegmented neutrophils while the sedimentation rate rose only slightly to 18 mm per hour (Wright method).

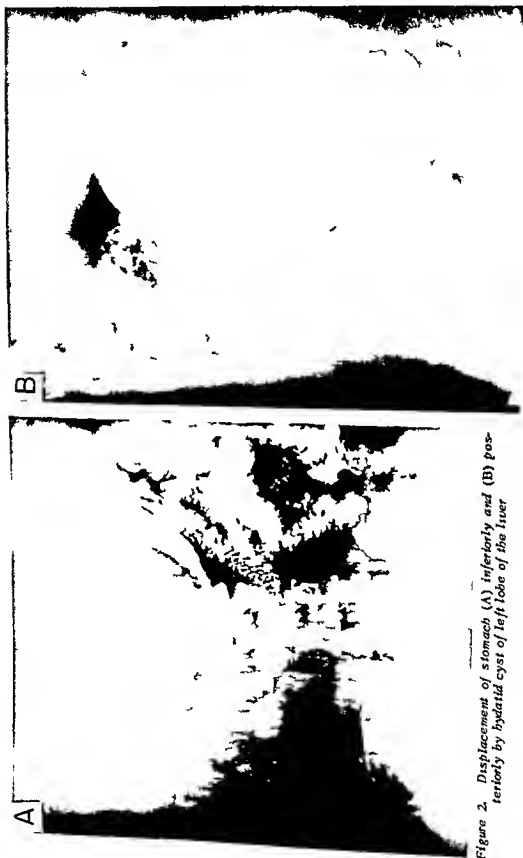


Figure 2. Displacement of stomach (A) inferiorly and (B) posteriorly by hydatid cyst of left lobe of the liver

od) The next day the leukocyte count had fallen to 12 500 per cu. mm with 81 percent granulocytes and the sedimentation rate was 23 mm per hour. There was no change in red blood cell or hemoglobin values.

The leukocyte count was normal thereafter. However the eosinophil percentage which had been 1 percent on all previous blood cell counts rose to 3 percent on 24 June, 6 percent on 27 June, 7 percent on 28 June, 10 percent on 29 and 30 June, and 15 percent on 1 July. Chamber eosinophil counts rose progressively from 490 per cu. mm. on 27 June to a peak of 1 380 on 5 July.

By 24 June a consideration of the startling reaction to aspiration together with the peculiar characteristic of the aspirated fluid (increased pressure, density almost of water in absence of protein) led to the conviction that a hydatid cyst had been aspirated and that sufficient leakage to result in a reaction of hypersensitivity had occurred. The subsequently rising eosinophil counts led to further confirmation to this clinical diagnosis.

On 27 June 0.2 ml of Echinococcus antigen (Eli Lilly Co.) was injected intracutaneously resulting in both immediate and delayed reactions. The former maximal within 30 minutes consisted of a wheal 2 cm in diameter surrounded by erythema 4 cm in diameter which faded within 1 hour. The next day an indurated erythema 4 cm in diameter covered the site of the previous reaction. Blood drawn before administration of the skin antigen was subsequently reported by the Communicable Disease Center U. S. Public Health Service to give positive complement fixation reaction with Echinococcus antigen.

The patient continued to have intermittent mild pain and tenderness in the epigastrium and right side of the abdomen and the epigastric cystic mass rapidly recurred. Surgical exploration was performed on 8 July. At operation performed by Drs. Joseph P. Bill and Leslie L. Saylor of this hospital, the left lobe of the liver filled the upper abdomen and seemed completely replaced by the cyst. The area of needle aspiration was found well healed. The cyst was aspirated partially evacuated of its germinal layer and its content sterilized by injection of 10 percent formalin (brand of 40 percent formaldehyde solution). It was then marsupialized to the peritoneum and packed with gauze. It has been draining uneventfully since. Laboratory examination of fluid and the germinal layer obtained at operation demonstrated scolices and hooklets of the Echinococcus parasite (fig. 3).

In an attempt to avert the consequences of hypersensitivity reaction to spilled hydatid cyst fluid, addition to walling off of the operative field by gauze pack, 100 mg of hydrocortisone was administered intravenously at operation before the cyst was opened and additional steroid therapy was continued during the next 2 weeks. Postoperatively the patient's temperature and pulse rose gradually and progressively reaching a peak temperature of 102.4° F. on the second and third postoperative days and subsiding by lysis over the next 2 days to be

followed by mild remittent fever for 3 additional days. Only mild leukocytosis and eosinophilia accompanied this reaction. The patient

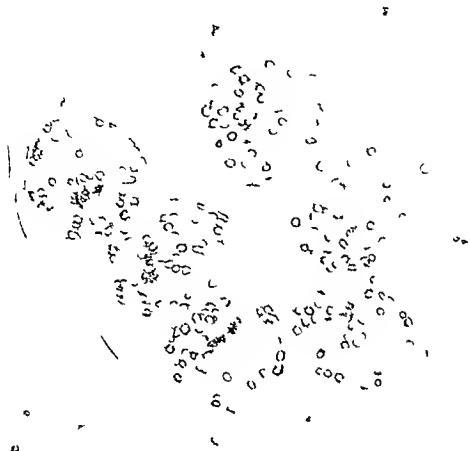


Figure 3 Blood capsule of *E. granulosus* containing six scolices; their heads magnified obtained from cyst fluid at operation. The brushlike hooklets are plainly visualized. ($\times 150$)

was otherwise asymptomatic and no cause for the febrile reaction could be found on physical or roentgenologic examination of the chest and abdomen. A slight but transient rise in serum bilirubin and cephalin-cholesterol flocculation occurred.

DISCUSSION

This case is reported primarily because of the probability of exposure to *Echinococcus* infection of an American soldier during World War II, and the need to alert others to the possible occurrence of other such cases. Although no other case of exposure to this disease during World War II has thus far been reported, one case of a native American soldier who apparently contracted the disease in France during World War I is on record.⁵

With the possibility of this diagnosis in mind, needle aspiration may be avoided, sparing the patient the hypersensitivity reaction which follows a leak of cyst fluid as well as possible spill

of scolices into the peritoneal cavity where they would serve as sources of new cysts. Preoperative diagnosis can be achieved if the entity is considered and the skin and complement fixation tests applied.

Treatment is surgical. If the cyst cannot be totally removed sterilization of its contents by formalin and total removal of its germinal layer is best followed by plication of the adventitial wall to obliterate the cavity and suturing without drainage. If obliteration of the cavity cannot be accomplished marsupialization and drainage are necessary but drainage may continue for a prolonged period.

The use of adrenocortical steroid therapy during and following operation as tried in this patient may help to avoid the stormy anaphylactic reaction which usually follows the inevitable spill of cyst fluid. No other report of the use for this purpose of adrenocortical steroid therapy has been found but antihistamine therapy has been reported to be of similar value.

SUMMARY

An American veteran of World War II presumably exposed to Echinococcus infection in North Africa in 1943 when he spent 2 months housed in a sheep barn was found in 1955 to have a large hydatid cyst of the left lobe of the liver. Needle aspiration of the cyst which is not advised resulted in probable peritoneal soiling and the patient had an anaphylactic reaction. He was protected against what might otherwise have been a similar but more severe reaction by administration of adrenocortical steroids during and after operation.

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Don't despair! Lots of things work in practice for which the laboratory has never found proof.

—Martin T. F. Sche

Metastatic Adenocarcinoma of the Thyroid Gland

HOWARD W SMITH *Captain, USAF (MC)*

THE posterior wall of the oropharynx is an unusual location for the presenting site of adenocarcinoma of the thyroid gland. A careful search of the literature failed to reveal a previously reported case. This case is reported to emphasize the possibility of finding thyroid tissue in pharyngeal biopsies and to stress the differential diagnosis when a mass is present near the path of embryonic migration of the thyroid gland.

The differential diagnosis of tumors in the pharynx include acute and chronic infection, granulomatous processes, vascular lesions, embryonic rests and benign and malignant tumors.

CASE REPORT

A 24 year old airman reported to the ear, nose and throat clinic at this base on 24 June 1955 to have his right tonsil removed.

Present illness The patient was well until 18 months prior to admission, at which time he noted a small swelling in his throat about the size of a 25 cent piece. The swelling was sore for only a few days. He soon became adjusted to the presence of the small mass and did not seek treatment at that time. Nine months prior to admission the patient again experienced soreness in the area of swelling and reported to the infirmary on routine sick call. He was said to have "tonsillitis" and received penicillin injections for 4 days. The soreness in his throat disappeared for about 2 weeks and then gradually returned. Six months prior to admission he noticed a swelling in the right side of his neck for the first time. He had his shirt collar made a half size larger but it still remained too tight. Three days prior to admission the patient reported to the ear, nose and throat clinic to arrange for removal of his right tonsil which was gradually making talking and swallowing more difficult.

Past history The patient's health in the past had been excellent. He had had the usual childhood diseases but no history of mumps, scarlet fever or rheumatic fever. The patient had experienced no adult infectious diseases. Both tonsils had been removed at the age of 13 years because of recurrent attacks of tonsillitis.

He reported a weight of 181 pounds and gain of approximately 15 pound in the preceding year. There was no family history of cancer or endocrine disorders.

Physical examination. On admission the patient's temperature was 99 F, the pulse 90 and the respirations 16. The blood pressure was 130 systolic 80 diastolic. He was a well-developed, well-nourished young man in no distress. His voice was somewhat muffled as though his soft palate were defective. The nasal septum was deviated to the right with only slight reduction of air passage on that side. There was a mass in the oropharynx occluding the whole right side (fig 1). The convexity of the mass was directed anteriorly with a distinct fold be-



Fig 1 The mass on the right posterior pharyngeal wall extending from the lateral side of the lateral pharyngeal wall completely filling the right pharynx.

tween it and the anterior part of the right pharyngeal wall. The mass had pushed the pharyngoplaty and glossopalatynus muscles forward on the right side. There was no fullness or displacement of the soft palate although the mass extended up to touch its inferior border. The mass was of normal color and consistency of the mass and not adherent to it. The mass was firm, nonmovable, not tender, nonfluctuant and did not pulsate. A soft movable nontender node 1 cm long was palpated anterior to the right sternomastoid muscle at the angle of the jaw. There was a 2 cm soft movable node above the middle third of the right clavicle posterior to the sternomastoid muscle. A 3 cm soft movable node was felt anterior to the right sternomastoid muscle at

approximately the outer edge of the right lobe of the thyroid gland. The thyroid gland did not appear to be enlarged and no definite masses were palpable. There were no physical findings suggestive of endocrine dysfunction. The remainder of the physical examination was essentially negative.

Laboratory data and diagnostic studies. Urinalysis was negative. Examination of the blood revealed a hemoglobin of 13 grams per 100 ml and a white blood cell count of 6,200 per cu. mm with a differential count of 60 percent neutrophils, 36 percent lymphocytes, 2 percent monocytes, and 2 percent eosinophils. The red blood cell count was 4,350,000 per cu. mm with a normal smear. The hematocrit was 40 ml per 100 ml. The sedimentation rate was normal. Roentgenograms of the skull, sinuses, pelvis, and cervical, dorsal, and lumbar vertebrae were indeterminate for metastases. A barium examination of the esophagus was negative.

Nasopharyngoscopy revealed a mass in the lower part of the nasopharynx on the posterior wall extending from the midline of the pharynx to the right pharyngeal wall, pushing it laterally and also extending superiorly to a point just below the right eustachian tube orifice. The mucosa overlying the mass in this area appeared normal.

Direct laryngoscopy revealed that the mass extended inferiorly on the posterior and lateral pharyngeal walls to a level slightly above the epiglottis. Its surface there was smooth throughout with no changes in the mucosa. The tongue in this area was normal.

A biopsy specimen of the pharyngeal mass was obtained after a vertical incision about three fourths of an inch long was made through the mucosa and subcutaneous tissue overlying the mass. Fibers of the superior constrictor muscle were separated horizontally to reveal a white, glistening, firm, nonfluctuant, nonpulsatile mass lying on the prevertebral fascia. The wedge of tissue removed from this encapsulated mass appeared to be reddish brown in color, friable, and extremely vascular.

Multiple sections through the biopsy specimen revealed innumerable normal appearing thyroid acini filled with dense acidophilic colloid. Between the acini there was a homogeneous connective tissue stroma.

Hospital course. Following diagnostic studies at the base infirmary, the patient was referred to a general hospital for tracer studies and surgical care. Scintillograms in the right lateral position revealed slight uptake of radioactive iodine (I^{131}) at the angle of the jaw. There was normal uptake and a relatively normal distribution throughout the thyroid gland. A radical neck dissection and total thyroidectomy were subsequently performed. The neck nodes were examined and found to resemble normal thyroid tissue. A small nodule was found in the right lobe of the thyroid gland.



2

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Figure 3 (case 2) Retrograde urogram on 13 July 1954 showing a ca of ext avasation.

catheterization of the ureter met with failure. The patient was transferred back to this hospital on 30 August 1954. A repeat intravenous pyelogram (fig 5) confirmed the diagnosis of complete blockage of the left ureter with absence of renal function on the left. The urine contained 3 to 5 red blood cells and 30 to 40 white blood cells per high power field and monilia organisms were found on culture.

On 2 September 1954 the left ureter was explored. The pelvic portion was found embedded in dense scar tissue with loss of normal characteristics. The normal portion was resected as low as possible leaving a gap of about 3 inches to the bladder. Starting on the right wall a section of bladder about 2 cm in width and 8 cm in length, with the base on the upper left portion of the bladder, was resected. There was some shrinkage of the flap. The bladder was closed with cystostomy drainage. The flap was rolled into a tube and sutured with No. 00 chromic.



Fig 5 (as 2), Int us py 1 gr m 31 A gust 1954
howl g nonfun ti gl ft kidney



Fig 4 (as 2) P pe i ret gr d ur gr m 28 July 1954.



Figure 6 (case 2) Postoperative retrograde urogram



Figure 7 (case 2) Cystogram demonstrating nipple without ureteral reflux.

catgut. An end-to-end anastomosis was made with the ureter over a No 16 polyvinylite tube which was brought out with the cystostomy tube.

The splint was left in place 3 weeks after which the ureter was dilated further with a No 12 French catheter. A retrograde pyelogram on 4 October (fig. 6) showed that the pelvis of the left kidney had returned to normal size. A cystogram revealed about 2 cm of reflux past the pedicle flap (fig. 7). An intravenous pyelogram also in October revealed a normally functioning kidney with no evidence of hydronephrosis. The urine remained sterile and the patient asymptomatic.

DISCUSSION

When tissue is needed to alongate the ureter at either of its ends, we recommend the use of urinary pelvis or bladder tissue. The advantages are good blood supply, use of tissue similar to the ureter, and simplicity of operation. We left the splinting catheter in place for 3 weeks, but believe healing will be better if this time is prolonged to 4 or 5 weeks.

We did not use nephrostomy tube drainage in case 2. No attempt was made at any time to obtain a watertight closure. We believe that it is best to use the minimal number of sutures to obtain approximation without tension.

It has been stated that as much as two thirds of the ureter can be replaced by bladder flaps. The amount that can be replaced at the upper end depends on the size of the renal pelvis.

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SURGERY IN GENERAL PRACTICE

The intern who is contemplating general practice would be well advised to concentrate on medical and surgical diseases and gynaecology rather than order. Contrary to popular belief, patient requests for major or minor surgery constitute less than 3% of the work of a G. P. In a temperate climate such as ours, otolaryngology occupies more of his time (about 5%) and should receive attention accordingly.

—H. G. HALL, M.D.

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Myocarditis in Acute Poliomyelitis

RICHARD LAWRENCE *Commande (MC) USA*

DAVID B CARMICHAEL *Lieutenant Command (MC) USA*

FOR many years the pathologist has been aware of acute myocarditis as a complication of acute poliomyelitis. Myocardial involvement consisting of cloudy swelling of the muscle fibers and interstitial edema was noted in five of six cases of acute poliomyelitis reported by Robertson and Chesley¹ in 1910. In 1918 Ahramson² reported evidence of myocardial inflammation in a pathologic report on 43 cases of acute poliomyelitis. In 1934 Cowie and associates³ reported four cases of myocarditis associated with fatal poliomyelitis. In one of these patients, the myocarditis was localized in the right atrium with a mural thrombus at the site and resultant pulmonary embolization. In 1942, Saphir and Wile⁴ described seven cases of poliomyelitis in which histologic evidence of interstitial myocarditis was present and identified myocarditis as a feature of poliomyelitis. Saphir subsequently reported 10 cases of myocarditis found at autopsy in a series of 17 patients dying of poliomyelitis and suggested this as a cause of sudden death in this disease. An unusual case of acute poliomyelitis and verrucous endocarditis involving the mitral valve for which no rheumatic or bacterial cause could be identified was reported in 1946. A review of the postmortem findings in 35 patients revealed evidence of myocarditis in 14.⁵ It is of interest that in this series there was one case of myocarditis with perforation of the posterior wall of the right atrium, one case of verrucous endocarditis involving the mitral valve without evidence of rheumatic fever, and one case of endarteritis of a patent ductus arteriosus. Minimal valvular changes with and without myocarditis were found almost constantly in this series. These consisted of separation of the valvular stroma as if by edema and eosinophilic bundles of collagen fibers that were more marked in the aortic and mitral valves. Jungeblut and Edwards⁶ isolated the poliomyelitis virus from the hearts of three patients dying of poliomyelitis.

Electrocardiographers have also been aware of the myocardial aspects of this disease. Electrocardiograms in a series of 226 patients with acute poliomyelitis were reported to be abnormal in 32 (14.2 percent).⁷ The frequency of abnormal tracings was found to increase with the severity of the disease and with the increase in the duration of the fever. When abnormal tracings occurred it was observed that changes persisted for several weeks.

In a recent group of 265 patients with poliomyelitis abnormal electrocardiograms were found in 37 percent it was further noted that in those with bulbar involvement 50 percent of the tracings were abnormal. In a review of 49 cases occurring from 1942 to 1951 myocarditis was found in 55.3 percent and it was further noted that the incidence and severity was greater in certain epidemics the fatal cases in 1949 having an incidence of myocarditis of 100 percent. Because of this it was suggested that specific strains of poliomyelitis virus may be viscerotropic.

Clinical correlation with these findings has been more difficult to evaluate. As has been mentioned above Saphir hypothesized myocarditis as a cause for sudden death in this disease and Dolgopoi and Dragan reported that several patients with poliomyelitis dying of heart failure showed the findings of acute myocarditis at autopsy. Recognition of this complication at the clinical level has been a recent innovation. In general although myocarditis in acute poliomyelitis and more especially in bulbar poliomyelitis is now a well recognized pathologic entity clinical attention has not been directed to the frequency of cardiac involvement in the disease complex. In some current texts of internal medicine this manifestation of the disease is omitted or mentioned only briefly.

Because of the serious neurologic involvement in poliomyelitis the diagnosis of myocarditis may be extremely difficult to make. Dyspnea cyanosis and tachycardia are of little value in the differential diagnosis in one reported comparative series they occurred with equal frequency in those with or without myocardial involvement. Occasionally with severe myocarditis bradycardia may occur and may be a useful diagnostic sign. Nevertheless in the diagnosis great dependence must be placed on electrocardiographic analysis.

A comprehensive review of the electrocardiographic changes associated with acute myocarditis is beyond the scope of this presentation. No specific pattern is universally indicative of myocarditis although certain diseases may characteristically present one or another abnormality with unusual frequency. *e.g.* first degree AV block in acute rheumatic myocarditis. At this time no such predilection has been demonstrated in myocarditis associated with poliomyelitis. Criteria for electrocardiographic abnormality have been described by several examiners. Tachycardia T wave changes and prolongation of the Q-T interval have been considered to be the most frequent alterations. R-S-T segment shifts arrhythmias and conduction defects are also found. Gittleman and associates have stressed Q-T prolongation as a useful sign particularly in the forms of myocarditis not associated with rheumatic fever.

Reviews totaling 905 cases of acute poliomyelitis revealed electrocardiographic evidence supportive of myocarditis in 310 cases, an incidence of 34.2 percent.^{9, 11, 15, 17-1} Reubi and Bornstein¹ noted an increased incidence of myocarditis in severe cases of poliomyelitis, equaling 80 percent in severe cases, 36 percent in mild cases, and 18 percent in abortive forms. As noted above, the incidence in the bulbar form has been particularly high.

CASE REPORTS

An instance of myocarditis suspected clinically and confirmed electrocardiographically in a patient with severe bulbospinal poliomyelitis is the subject of the first case report.

Case 1 A 35 year old man was admitted to the hospital on 23 July 1954 complaining of difficulty in swallowing and talking. The history revealed that he had been apparently well until 2 days prior to admission when he noted the onset of difficulty in swallowing and inability to expectorate accumulated pharyngeal secretions. On the day prior to admission he vomited several times and noted recurrent nausea and mild malaise. He also found that he was unable to speak as strongly as previously and that his swallowing difficulties had increased. The past history revealed that he had had rheumatic fever in 1943 apparently without sequelae.

The physical examination on admission revealed the blood pressure to be 150/70 mm. Hg, temperature 104.8° F (rectally) and the pulse 120. The patient had marked difficulty in disposing of pharyngeal secretions and difficulty in maintaining an airway. The voice was somewhat weak. No difficulty in respiration nor weakness of the extremities was apparent. Reflexes were slightly hyperactive in the upper extremities but otherwise were normal. Laboratory studies including the serologic test and chest roentgenogram were essentially normal. Spinal fluid studies revealed a fairly clear spinal fluid with 100 white blood cells per cu. mm. of which 64 percent were lymphocytes. Treatment consisted of tracheotomy and intratracheal suction as necessary, maintenance of fluid and electrolyte balance and terramycin (brand of oxytetracycline) for control of infection. Feedings were accomplished with an intragastric tube. Because of the development of respiratory insufficiency he was placed in a Drinker respirator and respirations were adequately controlled.

The patient appeared to be improving until 2 weeks after admission when he developed a low grade fever, became quite apprehensive and restless and developed a persistent tachycardia of 120 per min. The apical first heart tone was of poor quality but otherwise no clinical abnormalities were elicited. An electrocardiogram at this time revealed a sinus tachycardia, prolongation of the Q-T interval and inversion of multiple T waves (fig. 1).

He was treated with *sedation oxygen and careful nursing care*. During this period he developed a *right facial weakness*, weakness of both lower extremities with foot drop on the right and slight weakness of both arms. The evidence of myocarditis cleared spontaneously over a period of several weeks and the electrocardiogram reverted to normal. Rehabilitation measures consisted of physiotherapy and tube feeding for a persistent pharyngeal paralysis.

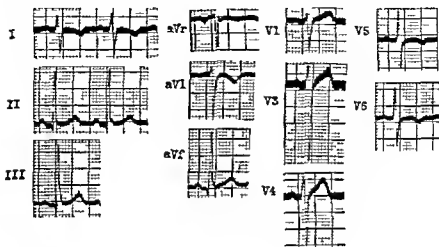


Fig. 1 (see I) Electrocardiogram of 18 August 1954 revealing prolongation of the Q-T interval and inversion of T wave in leads I, V₁, V₂, and V₃.

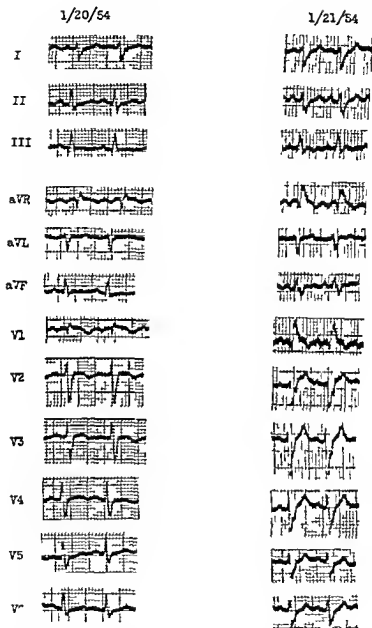
By virtue of the systemic effects of the poliomyelitic infection coupled with severe neurologic involvement the usual clinical guideposts for the diagnosis of acute myocarditis, i.e., fever, tachycardia, poor cardiac tones, gallop rhythm, cyanosis, fall in blood pressure, may be difficult to separate. Conversely it is possible for the cardiac abnormalities to dominate the clinical picture and relatively minor neurologic involvement to go unrecognized. A report by Brody and associates of a case of interstitial myocarditis complicating clinically unsuspected poliomyelitis represents such a situation. In this instance a patient with severe tracheal bronchitis and evidence of myocarditis was admitted, pursued a rapidly unfavorable course, and died 20 hours after admission. Autopsy revealed an interstitial myocarditis that was presumed to be the cause of death; however, a review of the pathologic material some months later revealed bulbar poliomyelitis. The following case represents a similar circumstance.

Case 2. A 23-year-old woman entered the hospital on the advice of the prenatal clinic because of exertional dyspnea for 1 week and dyspnea at rest for 2 days. The patient stated that at the age of 12 she had had migratory polyarthritides that was diagnosed as symptomatic of rheumatic fever. She had been treated with 6 months bed rest and subcutaneous

quently placed on limited activity at school. Findings of repeated examinations since that time had been normal. No murmurs or electrocardiographic abnormalities had been noted. There was no history of previous cyanosis or dyspnea. Two weeks prior to admission she had had a cold associated with a stuffy nose and some difficulty in breathing. One week before she had noticed considerable exertional dyspnea. She described this as difficulty in getting a deep breath. Her dyspnea was not affected by change of position.

Admission examination revealed a well developed, well nourished woman in obvious respiratory distress with shallow, rapid breathing. The blood pressure was 110/80 mm Hg, pulse 120 and temperature 99° F. The skin was pallid and slightly cyanotic. No distention of the neck veins was observed. The lungs were clear to auscultation and percussion. Cardiac examination revealed a tachycardia of 120 per min. with an apical first heart sound of poor quality. No murmurs or friction rubs were heard. The heart did not appear to be enlarged. A determination of circulation time was done. Arm-to-tongue was 25 seconds and arm-to-lung 6 seconds. The venous pressure was 110/mm of water. Vital capacity determinations were 35 percent and 41 percent of normal. Electrocardiograms taken the second and third hospital days are reproduced (fig. 2). Abdominal examination revealed an enlarged uterus near term with possible hydramnios and active fetal movements. A toentgenogram of the chest showed the heart to appear enlarged to both the right and left. Laboratory studies, including a complete blood cell count and total protein, serum sodium and potassium, nonprotein nitrogen and blood urea nitrogen determinations, were normal. The CO_2 combining power was reported as 13.5 and 14.5 mEq per liter on two separate occasions. Chlorides as NaCl were 85 mEq per liter and the blood pH was 7.2. During the day the patient became more cyanotic and nauseated and was placed in an oxygen tent. On the following day a repeat arm-to-lung circulation time was 18 seconds and the vital capacity was recorded as 53 percent of normal. At about 1500 hours she delivered twins of normal appearance. She continued to be dyspneic and cyanotic and 6 hours later the pulse rose to 130-135 per min. and became irregular at the wrist. The electrocardiogram showed a right bundle branch block S-wave type in addition to tachycardia (fig. 2). Cheyne Stokes respirations were observed. The lungs remained clear and there was no evidence of congestive failure. No cardiac murmurs or friction rubs were heard. The possibility of a nonspecific myocarditis was entertained at this time.

About 3 hours later the patient suddenly sat up in bed and complained of being extremely short of breath. She became cyanotic, gasped for air and within a moment her respirations ceased. Autopsy findings revealed a nonspecific myocarditis which was considered to be the primary cause of death. Later examination of recur sections from the bulbopontine area of the brain revealed findings which were compatible with acute bulbar poliomyelitis. There were marked edema and hyperemia of



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the glial troma w th dilat tion of the blood v els nd stuffing f the periv cular spaces by polym rphonuclear leukocytes and lymphocyt s

Many of the ganglion cells were degenerated with disappearance of the nuclei and extensive chromatolysis

These two cases prompted a review of the hospital records of cases of bulbospinal poliomyelitis. Adequate pathologic information was available on 15 cases covering the period from 1948 through 1953. Myocarditis of varying degree was present in 14 of these cases. One case of cardiac arrest in bulbospinal poliomyelitis with subsequent thoracotomy and unsuccessful massage of the heart was included. Poliomyelitis was unsuspected clinically at the time of death. Either because of the clinical unawareness of myocarditis as a possible complication or because of the technical difficulties involved, electrocardiographic tracings were obtained in only two of the cases reviewed.

SUMMARY

Although the exact role of myocarditis per se as a fatal complication in poliomyelitis is difficult to determine, it is apparent that it is a common complication. The clinical diagnosis of myocarditis may be exceedingly difficult because of severe systemic reaction coupled with neurologic involvement. The electrocardiogram may be of significant assistance in the clinical diagnosis.

Two cases of acute myocarditis associated with poliomyelitis are presented. In the first patient the neurologic findings predominated in the second cardiac abnormalities obscured the presence of poliomyelitis, which was still unsuspected at the time of the patient's death.

Of 15 patients dying of bulbospinal poliomyelitis at this hospital during a 6-year period, 14 demonstrated autopsy evidence of myocarditis.

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 1953

THE GOLDEN AGE OF MEDICINE

It is hard to realize that prior to 1900 only two diseases—smallpox and diphtheria—could be prevented and that specific drugs were available for only these conditions—malaria and hookworm. Quinine usually cured malaria and worm succumbed to many medicines including garlic, the one of which was effective even to worms.

For example, in 1930 7 percent of the children admitted to Duke Hospital had diphtheria and 4 percent with syphilis. Now diphtheria is a rarity and a positive serologic test for syphilis suggested erroneously until verified. As a result of this progress there has been a marked shift from the treatment of medical pediatric and geriatric patients in hospitals to treatment on an ambulatory basis in office and clinics. The modern teamwork between doctors, nurse technicians, occupational workers and psychologists is keeping patients well and treating them instead of the reverse.

—WILBURT C. DAVIDSON, M.D.
 in *New York Medical Journal*
 p. 1, Jan. 1955

A MESSAGE FROM THE A M A

Congress adjourned 2 August 1955, bringing to an end the First Session of the 84th Congress. Although there were 11,914 bills introduced in the session, much health and medical legislation was not acted upon and will therefore be carried over for consideration by the Second Session of the 84th Congress which will convene in January.

The American Medical Association followed the status of 404 of these bills, which had medical implications. Witnesses, representing the Association, testified on 21 separate bills before Senate and House committees. In the field of military medical affairs there were 26 bills introduced in this last session of interest to the Association. Two public laws were enacted pertaining to military medicine. One extended the Doctor Draft Act and the other one authorized the commissioning of male nurses.

Doctor Draft Act Extension Public Law 118, 84th Congress, 29 June 1955, extends the authorization for the induction of physicians, dentists, and allied categories to 1 July 1957. It continues the \$100 per month equalization pay for physicians and others to 1 July 1959. Two important changes were made in the extension of the Doctor Draft Act. First, the age limit for the call up of special registrants was reduced from age 51 to 46. Second, the law exempts from induction special registrants, 35 years of age or older, who are or have been rejected for a commission as a medical or dental officer of the Armed Forces if such rejection was solely for physical disqualification.

Commissioning of Male Nurses Public Law 294, 84th Congress, 9 August 1955, authorizes the commissioning of male nurses and male medical specialists (dietitians, occupational and physical therapists) as reserve officers in the Army, Navy, and Air Force.

One bill, H. R. 483, which passed the House on 18 July 1955, would authorize the appointment of osteopaths as medical officers in the Army, Navy, and Air Force. Another bill passed the Senate as S. 2587 on 30 July 1955. It would authorize military status for commissioned officers of the Public Health Service in time of national emergency. At the present time military status is only authorized in time of war.

Immediately preceding the adjournment of Congress, two bills were introduced in the House and one in the Senate relating to

medical care for dependents of military personnel. These measures were referred to the Armed Services Committees. H. R. 7790 was introduced by Chairman Vinson of the House Armed Services Committee. It is identical with S. 2720 sponsored jointly by Senators Russell and Saltonstall. These measures drafted by the Department of Defense would provide medical and hospital care under three general plans: (1) in military facilities; (2) in civilian facilities through a contributory health insurance program; or (3) in civilian facilities with part of the actual cost borne by the dependent.

H. R. 7806 was introduced by Congressman Price. This bill requires the use of prepaid nonprofit health insurance, civilian facilities, and civilian medical personnel to provide limited medical care to servicemen's dependents. It permits the use of military facilities only where civilian facilities or personnel are inadequate.

Other military medical bills which were not acted upon during the first session pertain to: (a) the establishment of a United States Armed Forces Medical Academy; (b) repeal of examinations for medical personnel for promotion in the Armed Forces; (c) expanded medical care for retired military personnel; and (d) military credit for civilian inter-area training.

In addition to the military medical laws passed in the First Session of the 84th Congress, laws were enacted authorizing a national mental health survey and for research concerning air pollution control.

Mental Health Survey. Public Law 182, 84th Congress, 28 July 1955, authorizes the undertaking of nongovernmental multidisciplinary research into and reevaluation of all aspects of our resources, methods, and practices for diagnosing, treating, caring for, and rehabilitating the mentally ill, including research aimed at the prevention of mental illness. This measure authorizes \$1,250,000 in Federal grants to finance the national survey of mental health problems. The survey would extend for three years.

Air Pollution Control. Public Law 159, 84th Congress, 14 July 1955, provides for a 5-year program. This bill authorizes \$95 million in grants to state and local governments, public and private institutions, and individuals for research, training, and demonstration projects in air pollution abatement.

PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army, Navy, and Air Force have recently received *temporary* promotions to the rank indicated

Medical Corps

George L. Alford, Jr., Lt., USN	Jack Kindle, Lt., USN
Charles F. Aquadro, Lt., USN	Robert F. Kirk, Lt., USN
William F. B. Hanson, Lt., USN	Louis R. Krass, Lt. C. mdr., USN
John C. B. n., Lt., USN	P. t. Kurilcz, J., Lt., USN
Frederick B. B. ck., Lt. Comdr., USN	Stuart O. K. st. mann, Lt. Comdr., USN
E. t. w. Be. hler, Jr., Lt., USN	Thomas B. Le. b. h. e. r. t. z., Lt. Comdr., USN
O. w. n. O. Benton, Lt., USN	J. o. m. e. J. L. bo. v. e. z., Lt., USN
J. o. e. p. h. A. Be. a., Lt., USN	Richard H. L. e., Lt. Comdr., USN
J. m. L. B. k., Lt., USN	Sheldon G. L. bow., Lt., USN
J. h. n. F. Bohle. der. B. e. g. G. a., USA	W. a. e. A. Linz, Lt., USN
R. p. h. a. F. Borr. ll., J., Lt., USN	Mortimer Lo. be., Lt., USN
Mur. d. k. S. Bowman, Lt. C. mdr., USN	R. h. a. r. d. E. Lue. h. r., Lt. Comdr., USN
Leonard H. Brado., Lt., USN	Ramo. R. Lusa. d., Lt., USN
P. m. b. r. k. e. A. Br. w. a., Capt., USA	Charles E. Mangan, Lt. Comdr., USN
Lothar R. Can. d. l., Lt., USN	Edw. a. d. C. M. Keo., Capt., USA
J. m. e. M. Col., Lt. Comdr., USN	Glen E. McPheron, Lt., USN
Clar. a. c. H. Conn., Capt., USA	Jame. F. Morrell, Lt. Comdr., USN
J. o. b. D. Co. tabl., Lt., USN	Robe. t. W. Ob. e. n., Lt. C. mdr., USN
John C. C. untry, Lt. C. mdr., USN	Richard C. Packert, Lt., USN
R. b. e. r. t. B. Crum, Lt., USN	Paul H. Pennyp. cker, Lt. C. mdr., USN
D. v. id. C. Dix. o., Lt. Comdr., USN	J. m. s. C. P. t. e. r. s. o., Lt. Comdr., USN
H. b. e. t. L. Eck. e. t., Lt., USN	J. h. n. R. P. e. c. e., Lt., USN
L. w. r. n. c. D. Egbert, J., Lt., USN	Jame. M. Poy. t., Lt. Comdr., USN
L. w. r. c. e. K. Eppl., Lt., USN	V. t. A. P. t. h. e. r., Jr., Lt., USN
Da. v. id. W. E. k. l. son, Lt., USN	K. a. t. h. R. R. bin. o. v., Lt., USN
Ann C. F. d., Capt., USA	J. m. e. L. R. ga., Lt., USN
Robert E. Fultz, Lt. Comdr., USN	I. r. m. A. R. th. r. o. c. k., Lt., USN
Stan. l. y. Giannell, J., Lt., USN	Ge. o. r. g. E. Scott, Lt., USN
Fran. L. Gik. n., Lt. C. mdr., USN	P. t. e. r. W. Schn. id. e. t., Lt. Comd., USN
Har. l. d. W. Gl. r. d. y., Brig. Gen., USA	O. a. d. Schulman, Lt., USN
D. n. a. l. d. J. Glot. z. t., Lt., USN	Le. t. Schwartz, Lt., USN
Jam. W. G. e. r., Lt. C. mdr., USN	William C. Sharp, J., Lt. C. mdr., USN
D. v. d. M. Had. l. y., Lt., USN	Martin C. Shea, J., Lt., USN
Jam. R. Ham. l. t., Lt. Comdr., USN	Chal. R. Sm. t. h. r., II, Lt., USN
F. n. k. P. Hamm, Lt. Comdr., USN	Edw. r. d. M. Smith, Jr., Lt. Comdr., USN
Carlo. E. Hardey, Lt., USN	Clar. n. c. R. Sowe., Lt., USN
Joh. P. Harm., Lt., USN	J. o. p. h. Steg., Lt., USN
Mack M. Hill, Jr., Lt. Comdr., USN	Mar. hall P. Stone. t. r. e. t., Lt. Comdr., USN
Jos. p. h. M. H. ilo., Lt., USN	Will. m. M. Strunk, Lt. Comdr., USN
Richard L. Hochman, Lt., USN	P. ul. Tarr. ll., Lt., USN
Ald. n. V. Holm, Lt. Comd., USN	Jam. I. Tb. o. r. n., Lt. Comdr., USN
Roy W. H. lm., Lt. Comdr., USN	Edw. M. Tom. l. n., Lt. Comd., USN
Charl. E. Hugg. n. s., Lt., USN	Lockland V. Tyl., Jr., Lt. Comd., USN
John D. J. h. n. s., Lt., USN	Henry J. Wa. s., Lt., USN
R. l. p. h. T. Justina. o. dia., Lt., USN	Herbert L. W. l. t. e. r., Lt. Comdr., USN
Andrew M. A. nl., Lt., USN	Franklin P. Ward, Lt., USN

Medical Corps—Continued

Ge g W Warr Lt. USN	J hn R W od B s Gen. USA
Ala D W tso Lt. C mdr USN	H ber E. Yeagley Lt. USN
R be t W man, Lt. USN	L l yd G Y pp Lt. USN
J m E Wh id Lt. C mdr USN	G s G Zorn J Lt. Comdr USN
Larry E Williams Lt. USN	

Dental Corps

J hn G Bar nko Capt. USAF	Eng ne F L nsk Lt. USN
R b t B ul y Capt. USAF	Stanley L in Capt. USAF
Mark B Lt. USN	Ca lo L nno Lt. USN
Mn so M. Black J Lt. USN	H rald J Mala Lt. C l USAF
Ray P B rill Lt. USN	J me A Markwood Lt. USN
William L Blackm J Lt. USN	Th ma A M Clur Lt. USN
J ph R Boha k Lt. USN	J k W M N l Capt. USAF
Jea p r E Bonque t Lt. USN	Frank A Millana J Lt. USN
K an th Boye Lt. USN	Howa d C. Mackell J Lt. USN
Donald S Brow Lt. USN	Raymo d E Murphy Cap. USAF
B j m M Brun III Lt. USN	Charl L P s J Lt. USN
William J Car ll Lt. USN	Hub rt B P lne Lt. C l USAF
D a l V Cherry Lt. USN	J an A P card Lt. USN
Jam R Childs Lt. USN	J hn S Pik Lt. USN
William I C re d Capt. USAF	M R thburn, Lt. USN
R hard H. Cord Lt. USN	Cha l E Ray Lt. USN
T nell F Dsk Cap. USAF	Hal G R dcl Capt. USAF
N l C. D ma Lt. USN	Harry J R in Lt. USN
J h A D yl Capt. USAF	H ary W Rack J Lt. USN
Emm rt A E to Lt. USN	B al rd L Samuel Lt. USN
Edwa d L F l C p USAF	Charl O S ul Lt. USN
Max W F read J Lt. USN	R ymo d J Schn id Cap. USAF
Harry N Ga bert Lt. USN	D ugia N So Capt. USAF
J hn O G ppo Lt. USN	J ph N Stok Cap. USAF
Ca l F G gino Lt. USN	Georg J T yl Lt. USN
J hn W Hap ine J Lt. USN	Ray P T ylor Lt. USN
J ph C Harris Lt. USN	L oy E Tiddall C p USAF
Erwin J N ink l J Lt. USN	J me W V en Cap. USAF
J h N N ling w rth Lt. USN	P cy F W l et Lt. USN
L laod C N to Lt. USN	Theod B W so J Cap. USAF
L nard B l bi er Lt. USN	S ouel J Whad y Lt. USN
Arthur M K hn Lt. USN	J h J W bb Lt. USN
J m Kaufman, Lt. USN	J ck K Whitma Lt. USN
R lph E K owl J Lt. USN	Martin J Wieland Lt. USN
Joh R La dgraf Lt. USN	

Medical Service Corps

D id K Ander 1st Lt. USAF	Jos ph E N Da gl Lt. USN
Zeb G Bell J 1st Lt. USAF	Varre F Ds 1 Lt. USAF
Edgar A Blatz C l USA	Edward J El Lt. USN
R bert L Bon dma 1 Lt. USAF	Elw od E Fish 1 Lt. USAF
G s A Bo Lt. USN	Clar V F y C l USA
Cl fto W Bov 1 Lt. C l USAF	Martin Gellma Lt. USN
R bert E B tma 1 Lt. USAF	N l E Goodr ch J Lt. USN
Thoma H. Calne 1 Lt. USAF	Bar ey O Green, Lt. USN
Th ma A Carlin Col. USA	P el D Gr nckl Lt. USN
Aust E Cal Cap. USA	William O Ha ing Col. USA
Donald M. Cook 1 Lt. USAF	J hn A N y 1 Lt. USAF
Steph B Co l r 1 Lt. USAF	J me H. Ha 1 1 Lt. USAF

Medical Service Corps—Continued

Solomon Heiman 1st Lt. USAF
 James D. Kelly Lt. USN
 Milton E. Koepke Lt. USN
 William S. L. Grange 1st Lt. USAF
 Sammy J. Long 1st Lt. USAF
 Daniel F. McCarthy Lt. USN
 Lowell H. McKenley Lt. USN
 Bonham Miller 1st Lt. USAF
 Rodrick L. Newland 1st Lt. USAF
 Rodna G. Pell 1st Lt. USAF
 Robert W. Pittenger Lt. USN
 Russell L. Platter 1st Lt. USAF
 John D. Pruitt Lt. USN
 Bradley B. R. dg Lt. USN
 Donald L. Robertson 1st Lt. USAF
 Clyde B. Segar Lt. USN

Robert Sharp Lt. USN
 Elizabeth E. Smith 1st Lt. USAF
 James W. Steel 1st Lt. USAF
 John W. Symons 1st Lt. USAF
 Joseph C. Thompson Col. USA
 Robert E. Thompson Lt. USN
 Theodore W. Tober Lt. USN
 Duan L. Twait 1st Lt. USAF
 Sumner W. Tz 1st Lt. USAF
 Robert O. Witte Capt. USA
 William H. Wells Lt. USN
 Seymour W. Zier 1st Lt. USAF
 Thomas E. Wheeler Lt. USN
 Francis H. Whitley Jr. Col. USA
 John D. Wilson, Capt. USA
 James F. Wood, 1st Lt. USAF

Nurse Corps

Louise J. Agnon Capt. USA
 Louis E. Andersen Capt. USA
 Blanca A. Aragonnes Capt. USA
 Mildred L. Bart Capt. USA
 Betty M. Bartz, Capt. USA
 Ann C. Berley Capt. USA
 Christine H. Berry Capt. USA
 Ellen M. Bogenschneider Capt. USA
 Mary L. Bradley Capt. USA
 Therese M. Brown Capt. USA
 Virginia N. Bugbee Capt. USA
 Alberta V. Caruso Capt. USA
 Margaret C. Casey Capt. USA
 Coren Chapma Capt. USA
 Mary E. Cohen, Capt. USA
 Margaret Cook Capt. USA
 Mabel H. Corbin, Capt. USA
 Anna B. Cost, Capt. USA
 Mary J. Daniels Capt. USA
 Doris K. Davis, Capt. USA
 Frances L. Delton Capt. USA
 Mary A. Doby Capt. USA
 Norbert Embry Capt. USA
 Lillian M. Erickson Capt. USA
 Kathleen E. Evans Capt. USA
 Anna E. Everett, Capt. USA
 Dorothy A. Ewing Capt. USA
 Vivian Farland Capt. USA
 Geraldene F. Im Capt. USA
 James P. Finney Capt. USA
 Margaret G. Gibson Capt. USA
 Eula A. Gentzler Capt. USA
 Miriam K. Ginsberg, Capt. USA
 Patricia G. Guertter Capt. USA
 Catherine R. Haggerty Capt. USA
 Betty J. Hall Capt. USA
 Helen M. Hill Capt. USA
 Goldie V. Holcomb Capt. USA
 Olive E. H. Capt. USA

Ann C. Johnson Capt. USA
 Hester M. Jackson Capt. USA
 Jean E. Jacoby Capt. USA
 Josephine J. Jankowski, Capt. USA
 Hilma Kane, Capt. USA
 Mary N. Kohlman, Capt. USA
 Catherine L. Lang Capt. USA
 Francis M. Liberty Capt. USA
 Reyes Lopez Vargas Capt. USA
 Elizabeth E. Lothian, Capt. USA
 Jeanne G. Marshall Capt. USA
 Katherine M. Martin Capt. USA
 Madeline M. Miao Capt. USA
 Myrtle A. McGowan Capt. USA
 Rita K. M. Laman Capt. USA
 Stephen Miklasovich Capt. USA
 Marion L. Mott Capt. USA
 Ruth Z. Mobley Capt. USA
 Felice R. Monahan Capt. USA
 Eula O. Morrison Capt. USA
 Mary E. Morris Capt. USA
 Oletha H. Nelson, Capt. USA
 Ethel L. Nibbel Capt. USA
 Sylvia H. Piskowski Capt. USA
 Madelyn N. Pirk Capt. USA
 Annie D. Paxon Capt. USA
 Winifred K. Phelan Capt. USA
 Drusilla N. Potts Capt. USA
 Remma B. Pratt Capt. USA
 Mary C. Quinn Capt. USA
 Ruth H. Reynolds Capt. USA
 Mary Rita Capt. USA
 Leta N. Romani Capt. USA
 Mildred L. Rush Capt. USA
 Patricia M. Schneider Capt. USA
 Alice M. Shreiber Capt. USA
 Anne M. Schroed Capt. USA
 Patricia E. Schuman Capt. USA
 Elizabeth F. Sprague Capt. USA

OFFICIAL DECORATIONS

LEGION OF MERIT

Vac A. By ne Col., USAF (MC)	E L L w i M j MC USA
Thom A. Do l y III Lt. (jg) (MC) USNR	Edwin D. M M en Lt Col MC USA
G rg B F ot Lt. C l DC USA	D d A. Myer Col MC USA
Jam T J h so C l. USAF (MC)	Har ld A. Ser C md (MC) USN
Ch l L Kirkpa k, Col MC, USA	Caldw ll J Stuar C pt. (MC) USN
W ll m H L w on C l USAF (MC)	Ralph E. Sw er C l USAF (MC)
William E. Leonh d C l., USAF (DC)	

SILVER MERIT

Earle S andl M j Gen MC USA

BRONZE STAR MEDAL

Eugen M. Bak III, Cap MSC USA	El beth C. Jon M j WMSC USA
Will m E Ca d berry J Capt. MSC, USA	J h H Wh tak Lt C l DC USA
Will m C. Dun k l J Cap MC USA	Kathy G W er Lt Col NC USA
Sally C. H y M j NC USA	

COMMENDATION RIBBON

Jul M. Ambe on Comdr (MC) USN	Arthur S N myra, Capt USAF (MC)
Sam l E Andr w M j USAF (MC)	J h A. N or L C l USAF (MC)
F de k O Bowma l L MC USA	H l O d w C p NC, USA
Wood A. Car Cap MSC, USA	R bern C. R l Lt. MSC USA
Phil p E. For l Lt. MSC USA	Lill B Rundell, M j NC USA
Gl adon C F Capt. USAF (MC)	J h S Stehls J Capt. USAF (MC)
Ann J Goodr h C pt. NC USA	Will m G S m l Lt. MSC USA
Henry V Guff th C pt. MSC USA	Joh N Todabl l L USAF (MSC)
Man h R H lbo ry Col., USAF (MSC)	Cl ll j Wundh m, J Maj MSC USA
Z L McCl key Lt. C l USAF (NC)	E te M Wil on l L NC USA
Mary C. McH gh l L NC USA	

O k L f Cl ster

Award d by h As For

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DEATHS

ZISKIND J me Abe L t n t (MC) USNR, Sh boyg W U S N l
Il sp t l P la Fl g d t d 1952 f m th U ty f W n
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t ct ve duty 8 De mb 1954 d d 6 O tob 1955 g 31 t th U S
N val Hosp tal Ph lad lph P f be l h m rthage

Reviews of Recent Books

MEDICAL EMERGENCIES Diagnosis and Treatment by Francis D. Murphy M D F A C P and five associate authors Foreword by George Morris Piersol M D 5th edition 603 pages illustrated F A Davis Co Philadelphia Pa 1955

This book which is in its fifth edition presents the acute conditions and medical emergencies most often encountered in the practice of medicine. Verbose discussions on the etiology and pathology of the described conditions have been avoided while the diagnosis differential diagnosis and treatment of these diseases and emergencies have been emphasized. The current methods of carrying out the suggested diagnostic and therapeutic measures are described accurately and in adequate detail.

Each chapter covers acute conditions pertaining to a single system or a specific type of emergency such as acute poisonings and all chapters have been brought up to date in all respects. The chapters on blood dyscrasias have been rewritten and many others have been revised. The discussion on the bacterial infections and the antibiotic drugs is current and is well presented.

This book is well written and edited. It is enthusiastically recommended to every practicing physician but particularly to general practitioners —RALPH D. ROSS, *Comdr (MC) USN*

CARDIAC EMERGENCIES AND HEART FAILURE Prevention and Treatment by Arthur M. Master M D, Marvin Moser M D and Harry L. Jaffe M D 2d edition 203 pages 14 illustrations Lea & Febiger Philadelphia Pa 1955 Price \$3.75

This beautifully written handbook gives sufficient brief information for the prompt diagnosis and proper treatment of cardiovascular emergencies. These emergencies are common problems to the general practitioner in civilian communities and to the general practice medical officer in the Armed Forces. This book is for that use and not for the use of the trained cardiologist, except as a quick reference.

Angina pectoris, heart failure, and coronary occlusion are adequately covered. The authors point out that the electrocardiographic diagnosis of myocardial infarction is limited to that of much value to the physician. It is a very useful chart for differentiating myocardial infarction from other causes of chest pain such as rheumatic heart disease, aortic aneurysm, and the discussion is made with regard to the differential diagnosis, prevention and treatment of the heart failure. The authors feel it is better to use of ACTH or cortisone in the early stages, however, the dosage recommended is considered to be low. Hypertensive emergency pathy

and crises of pheochromocytoma dissecting aneurysm and traumatic heart disease are covered briefly with short preferential statements of treatment

The illustrations are adequate except for the scarcity of electrocardiograms however the authors do not purport to discuss electrocardiography in detail The book is well indexed and has a most complete bibliography

This thin pocket sized handbook should prove of value to the office of any general practitioner or specialist other than a cardiologist Although the authors are conservative they utilize the newer methods that are appropriate and promise better results without increasing the risks to the patient —HORACE C. GIBSON C I MC USA

FLUOROSCOPY IN DIAGNOSTIC ROENTGENOLOGY by Ott D i b b g M D w h introduced by Fraz k j B r H M D F A C R 771 page 888 illustrations 523 figures W B Saunders C Phila d lph P 1955

This book reveals the potentials and limitations of fluoroscopy and comprises essentially knowledge on the subject in a single volume It is unique in that it apparently is the only one written to cover this method of study in all portions of the body

The early chapters deal with general aspects of the subject with a description of apparatus for image amplification and various other types of equipment There is a workable discussion about the localization of foreign bodies with fluoroscopic method In the sections devoted to examination of the various regions of the body the chest and gastrointestinal tract receive major attention and both discussions make fully worthwhile reading The head spinal canal neck and urologic tract are discussed and there is a short final chapter on the extremities

A large number of photographs of x-rays are included These have been reproduced as excellent positive prints so that one may visualize the picture as it is seen on the fluoroscopic screen There is a long bibliography at the end of each chapter and the index appears to be adequate

The book is well worth reading by the student radiologist and by all who have occasion to fluoroscope the chest and abdomen

—CLEMENT D. BURROUGHS Capt (MC) USN

SURGICAL FORUM Proceedings of the Forum Sessions Fort Worth Clinical Congress of the American College of Surgeons Atlanta Georgia November 1954 Volume V 851 pages Illustrated W B Saunders C Philadelphia P 1955

Those who are interested in the trends that surgery in America is following should read this annually released Surgical Forum Wide coverage is obtained as evidenced by the 393 authors represented The articles are all short averaging from four to fifteen pages and rather

by lend themselves to a rapid easy digestion of their contents. The illustrations are exceptionally clear and numerous and the bibliographies brief and basic.

It is not a book that can be easily read straight through. There are 10 main divisions under which relevant papers are grouped. This gives it a breadth of appeal to those in the surgical specialties that few volumes can claim.

One is impressed by the great amount of effort that has been focused on cardiovascular problems. About one third of the space is devoted to these papers. Much effort is still being applied to the old problems of the peptic ulcer and its many ramifications. Particularly fascinating to me are the many papers devoted to the steroids and their relationship to cancer and surgical endocrinology. The introduction to this section by Dr. Francis D. Moore is particularly stimulating.

Any surgeon involved with teaching or research should be familiar with the contents of this volume.—MAX L. SMITH Lt Col MC USA

OBSTETRICS by J. P. Greenhill M.D. 11th edition. 1 088 pages. 1 170 illustrations on 910 figures. 144 in color. W. B. Saunders Co. Philadelphia Pa. 1955.

In his second revision of DeLee's classic text on obstetrics Dr. Greenhill has combined his conservatism and perception with a wide knowledge of current literature to add much new data on many subjects including physiology of the fetus and newborn, toxemias of pregnancy, abruptio placentae, hemorrhages associated with fibrinogen lack, puerperal infection, choriocarcinoma, asphyxia, et cetera.

There are entirely new chapters on roentgenology in obstetrics, analgesia and anesthesia, fetal erythroblastosis and the Rh factor, diseases of the nervous system, induction of labor, and prolonged labor. A special chapter on endocrine changes and diseases during pregnancy is included.

This is an excellent revision of a standard classic work which is fully abreast of obstetrical research and current advancements in technique and treatment. It is recommended as a necessity for the library of all those interested in this subject.

—ELWOOD L. WOOLSEY Comdr (MC) USN

COLD INJURY. Transactions of the Third Conference, February 22-23-24 and 25, 1954, Fort Churchill, Manitoba, Canada. Edited by M. Lee Frier, M.D. 226 pages. Illustrated. Sponsored by the Josiah Macy Jr. Foundation, New York, N.Y. 1955. Printed in the United States of America by Madison Printing Co., Madison, N.J. Price \$4.50.

This monograph presents edited notes of discussion by conferees who are primarily interested in the physiologic and pathophysiologic effect of cold on man and experimental animals. The title of the conference is a misnomer in that there was no discussion relative to cold injury per se.

Whether or not one subscribes to the concept of neurodermatitis he cannot help but be intrigued by the author's presentation and while Dr Obmayer convincingly emphasizes the importance of psychic factors he does not fail to warn that other influences must receive due weight. As he says: "Nothing is more detrimental to psychocutaneous medicine than willingness to ascribe almost any inflammatory dermatosis of unknown cause to emotional tension." The reviewer agrees that such a ready escape mechanism is the great handicap of the concept of neurodermatitis.

The idea of an emotional component in such conditions as allergic eczematous contact type dermatitis, geographic tongue, and syphilis vulgaris may be a startling one to others as it was to the reviewer. The bibliography is extensive. The work is recommended as worthwhile basic study to all who deal with possible psychocutaneous disease.

—CHARLES D. BELL, Capt (MC) USN

THE YEAR BOOK OF DERMATOLOGY AND SYPHILOLOGY (1954-1955 Year Book Series) Edited by M. S. B. S. I. B. G. M. D. and Rudolph L. Ba. M. D. 472 pages, 59 illustrations. The Year Book Publishing Co., Chicago, Ill. 1955. Price \$6.

This Year Book contains abstracts of articles from journals received from December 1953 through November 1954. Its circulation extends to many countries and its subject matter deals with the reporting and analysis of significant advances in international dermatology. The volume has a well selected set of pertinent illustrations, a comprehensive subject index, and a convenient author index.

This is the 24th consecutive volume of the Year Book of Dermatology and Syphilology which the senior editor has helped to launch. During this year the specialty of dermatology has grown greatly in diversity, depth, scope, and stature. In addition to the value of the abstracts of international dermatologic literature and their removal of language barriers for those who cannot readily read foreign languages, two important features of this text have always had great appeal for the reviewer: (1) The introductory chapter by the editor each year devoted to a review of one pertinent subject. This year the reviewer recommends dermatologic mycology in the fields of trichophyton, trichophyton, and trichophyton, and trichophyton, and trichophyton. (2) The analytic comments on abstracts of the literature made by the editor at the end of many reports of articles. These are of particular value because they reflect the wide experience of the editor, especially of the editor's outstanding clinical research and investigation.

This volume is a valuable and useful addition to the library of every dermatologist and of every hospital with a dermatology department.

—FRANKLIN H. GRAUER, Capt MC USA

THE THERAPY OF SKIN TUBERCULOSIS by *Gustav Riehl* M D and *Oswald Kopf* M D Translated and revised by *E nest A Strakosch* M D Ph D American Lecture Series Publication Number 229 A Monograph in The Bannerstone Division of American Lectures in Dermatology Edited by *Arthur C Curt s* M D 247 pages illu trated Charles C Thomas Publisher Springfield Ill 1955 Price \$6 75

This monograph is especially useful for dermatologists and other physicians treating tuberculosis of the skin Therapy is discussed under the following topics General supporting therapy vitamin D therapy antibiotic therapy chemotherapy rubetculin therapy and physical and surgical therapy Every conceivable method for the treat ment of skin tuberculosis is presented in detail The latest methods are described including the use of vitamin D₂ streptomycin PAS and isonicotinic acid hydrazide The literature is covered in an encyclo pedic manner giving more than 300 references

The manner of approach is first a general discussion then references to the literature and discussion of the import of the articles concerning that particular subject This is followed by summarization of the use fulness of the drug ot method used based on the literature and the authors experience Although the photographs are few in number they are clear and illustrative This book deserves a place in the library of every dermatologist and specialist in tuberculosis

—LOUIS S LELAND Col MC USA

AN ATLAS OF MUSCULOSKELETAL EXPOSURES by *H F Mosely* D M M Ch (Oxon) F R C S (England and Canada) F A C S 235 pages with 376 ill strations in color nd 63 figures in bl ek and white Ill strated by *H len T MacA thur* B A with 5 plates by *F ank Nette* M D J B Lippincott Co Philadelphia Pa 1955 Price \$22 50

This volume correlates detailed anatomy and surgical exposures of the face upper extremity vertebral column and lower extremity The standard exposures depicted are those commonly used in orthopedic procedures and the surgery of trauma but they also are applicable to neurosurgical and plastic procedures on the parts involved

In its field the book is unique in that it employs to a great extent the diagrammatic use of color in an unusual method of presentation The illustrations are arranged to show anatomic structures layer by layer from the skeletal framework outward to the skin surface Then reversing the process surgical exposures are illustrated from super ficial to deep planes as viewed by the surgeon in the postured patient Each full page color plate is conveniently accompanied on the opposite page by an adequate descriptive text serving to correlate the theoreti cal with the practical considerations and to indicate the various points in order of relative importance In many instances the illustration and description go beyond actual exposure to detail certain operations and the lesions involved although the volume is not an atlas of oper ative procedures

In addition to the color plates there are simple line drawings and black and white photographs. The former illustrate the area of skin preparation required for each exposure and the photographs show the actual posturing and successive steps in draping patients.

The section on the face includes exposures of the temporomandibular joint, the mandible and the malar, maxillary and nasal bones. The upper extremity section contains exposures related to the clavicle, shoulder joint, scapula, humerus, elbow joint, radius and ulna, wrist joint and hand. Similarly the surgical exposures of the lower extremity from hip to foot are included. In the trunk section exposures of the vertebral column from the cervical vertebrae to the coccyx are presented along with exposure for cervical rib and the acro-iliac joint.

Pertinent references follow each section and there is an adequate index. This atlas should prove valuable primarily to orthopedic and surgical residents.—HARRY L. DEIN Lt Col MC USA

DENTISTRY IN PUBLIC HEALTH edited by W. L. J. P. H. D. D. S. M. S. P. H. J. B. M. W. D. D. S. M. S. P. H. 2d ed. 2d ed. om. pl. t. ly. d. d. wr. it. 282 p. g. Illustr. t. d. W. B. S. d. Co. Phil. d. lph. P. 1955. Pr. \$6.50.

This edition adds five years of results concerning dental health since the first edition in 1949. The 10 excellent chapters are compiled individually by the two editors and their collaborator, each chapter selective to each author's vast background of investigation. The charts and illustrations are elegantly reproduced in black and white.

Public health and statistics are synonymous in many readers' minds, however, this is not the situation presented by this book. How to interpret statistics and how to compile statistics are presented but in most instances the dental statistic has been condensed to short interesting facts.

Both sides of today's controversial dental problems are expertly presented. This is especially true in the chapter discussing periodontal diseases and treatment in which the author very delicately in subtle presentation permits the most biased reader to become aware of preponderant amount of evidence to prove conclusion for himself.

The book is useful to the military dentist responsible for large group of dental patients. The vast number of compiled bibliographies make this book valuable to any dentist preparing literature or investigations of a dental nature.

The primary purpose of the book is to aid in establishing dental public health courses and oral hygiene programs as well as dental health investigation. This book should also prove of value to each practicing dentist because dental public health is each dentist's responsibility. Students of dentistry and in allied fields such as nutrition or biochemistry can readily benefit from this reference textbook.

HENRY B. FITCH Lt Col DC USA

PRACTICAL ORAL SURGERY by *Henry B. Clark, Jr.* M D D D S 392
 pages 223 illustrations Lea & Febiger Philadelphia Pa 1955
 Price \$8.50

This text is a teaching aid for the dental student a method of continuing study for the graduate dental or medical practitioner and a solid review for the oral surgeon. The material is well developed beginning with basic concepts of definitions preoperative considerations, care and management of physical facilities and instruments and proceeds to various oral surgical and diagnostic problems. The volume ends with two excellent chapters clarifying hospital practice and the art of practice.

Clear illustrations make understandable the basic procedures positions and techniques of exodontia and minor oral surgery. Subtitles are used in each chapter. Whenever feasible sentence outline form is used which adds to the usefulness of the text as an everyday working aid.

The chapters on basic oral surgical technique and postoperative care and complications are worthy of detailed study by the dentist doing exodontia regardless of his background. The writing reflects the mature judgment of the author and any criticism of the book must be confined to relatively minor matters. The lack of a detailed bibliography is noted, and the lack of a chapter on anesthesia is felt.

The author has produced a textbook worthy of the excellent work his group is doing in the field of oral surgery. It is a practical text without being synoptic and without overloading the student and general practitioner with too weighty a reference work.

—CHARLES C. ALLING Major, DC USA

OPEN WIDER PLEASE The Story of Dentistry in Oklahoma by *J. Stanley Clark* 391 pages illustrated University of Oklahoma Press Norman Okla. 1955 Price \$5

This story of dentistry in Oklahoma begins with the early 1880's. The author describes its growth and development from territorial days to the present time including the problems that arose incident to the mobilizations during the two World Wars. He also discusses the future aims and interests of dentistry in Oklahoma.

The book records in much detail the history of legislation affecting the practice of dentistry and the licensing of dentists, dental hygienists and dental assistants, the organization, development and activities of territorial, state and local dental associations and the successful search for improved standards of professional training and ethics. Hundreds of dentists who took part in these activities are mentioned with full names, addresses and offices held carefully recorded and frequently with good descriptions of the individuals and the stand each took on various issues.

The book has a bibliography, an index and 26 appendixes. The appendixes include a roster of all dentists who have been licensed in

Oklahoma of officers of the State Dental Association of dental hygienists of dental assistants of Boards of Dental Examiners and of Oklahoma dentists who served in the Armed Forces

This is a book that most Oklahoma dentists will want to read and keep as the story of their profession in their State

—CHARLES M. FARDER C I DC USA

PRACTICAL MEDICAL MYCOLOGY by Edmund L. Kny M D Am
Leur Ser Pblcat N mbe 248 A M graph in Am c
Litur in I i m l M d Ed d by R oe L P II M D
F A C P 145 pag Il trat d Ch le C Th ma P bl h
Sp g f ld Ill 1955 P \$4 50

In an era when fungus diseases are becoming rapidly more important this small and easily readable monograph is most timely. It is well written and presents a difficult subject in a practically concise factual manner. The author, an expert in his field, considers separately each of the important recognized fungus diseases in man. Historical background, geographic distribution, key clinical features, laboratory identification, etiology, agent, mycology, immunologic features, prognosis, and treatment are well presented. Two small chapters on fungus sporas and all genera and on the role of protozoa as a cause of mushroom poisoning are included. The more important fungus diseases each have an excellent diagnostic illustration summarizing the epidemiologic, clinical, and diagnostic features and the different treatments.

The organization of the book with its thorough index makes it rapidly referable. The bibliography includes valuable recent contributions and dates on to many classical articles dating back to the latter portion of the nineteenth century.

It is seldom that a small book of this type contains so much practical information. It admirably serves its purpose in providing understandable and concise material for the student and practitioner.

—RICHARD I. CRONE C I MC USA

THE YEAR BOOK OF ENDOCRINOLOGY (1954-1955 Year Book Series)
Edited by Gilbert S. Godan, M D Ph D 392 pag Il ra d
Th Y B k P bl h In Ch g Ill 1955 P \$6

This yearbook offers the usual comprehensive and excellent review of selected content but adds to the current year's literature in the subject of endocrinology. The organization of the contents is basically the same as that of previous years. The volume is useful to all students and amplifies the written data.

The Year Book of Endocrinology serves the important role of having a volume well selected and excellently summarized contributions of literature in endocrinology for the current year. Those interested in the subspecialty should have this publication in their library.

—ANTON ZIRMUND Capt (MC) USN

COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION edited by Richard M. Heuvel, M. A. M. D. A. B. Neuling, M. D. John R. Vane, Sc. D. James R. Eckman, M. A. Ph. D. M. Katharine Smith, B. A. Carl M. Gambill, M. D. M. P. H. Florence Schmidt, B. S. E. and George G. Stulw. II, M. D. Volume XLVI, 1954. 843 pages. Illustrated. W. B. Saunders Co. Philadelphia, Pa. 1955.

The editors state that they selected the material in this collection with the interests of the general practitioner, the general surgeon and the diagnostician in mind, adding that material representative of the specialties and the basic sciences has been included in order to present adequately the work of the Mayo Clinic and the Mayo Foundation. Six hundred and twenty-nine papers are represented. Of these 134 are presented as abstracts or in greater detail. The inevitable result is an extremely varied selection of subjects involving most branches of the medical sciences.

The papers are grouped in sections according to anatomic systems with separate sections for radiology, physical medicine, anesthesia and miscellaneous subjects which include among others one paper on fevers of unknown origin and several on techniques of medical illustration.

As an obvious result of editorial policy, didactic and review papers predominate. Subjects of perennial and current interest are represented in writing that is interesting and lucid. Unfortunately the original bibliographic documentation of the papers has been omitted. The volume will be of particular interest to those interested in current surgical and medical thought and practices at the Mayo Clinic.

—JOHN A. SPITZNAGEL, *Mayo, MC, USA*

CIBA FOUNDATION COLLOQUIA ON ENDOCRINOLOGY, Volume VIII, The Human Adrenal Cortex, by editors of the Ciba Foundation, G. E. W. Wistenhof, O. B. E., M. A., M. B., B. Ch., and Vaguet, P. Carron, M. A., A. B., L. S., edited by Joan Ethirington. 665 pages, 227 illustrations. Little, Brown and Co., Boston, Mass., 1955. Price \$10.

This is a report of the international symposium on the human adrenal cortex held in London in April and June 1954, the eighth in a series of conferences on endocrinology since 1949, under the auspices of the Ciba Foundation.

An outstanding group of conferencees, all of them leading clinical and laboratory investigators in their several fields, presented a total of 35 papers relating to the adrenal cortex. Each paper was followed by a free discussion notable for its intimacy and informality. Penetrating questions and remarks during the discussions were freely made and honestly answered. In this volume every aspect of the hypothalamus-pituitary-adrenal axis is exhaustively considered from the histochemical reactions to the purely clinical features of the normal and pathologic physiology of these structures.

It is difficult and at times tedious reading due to the presupposition by the authors of intimate knowledge of steroid chemistry.

experimental methodology and complete familiarity with the world literature on the part of the reader. It is not a book for casual perusal. An extensive bibliography and a highly complete index make this work of encyclopedic value for the student of the adrenal cortex.

—ROBERT K. MOXON Lt. Col. (MC) USN

THE HYPOPHYSEAL GROWTH HORMONE NATURE AND ACTIONS. Edited by B. F. D. I. t. t. f. M. d. I. R. h. D. t. M. h. d. h. l. d. t. th. H. p. l. D. t. be 27 28 29 1954. Ed. or R. h. m. n. d. W. S. m. th. J. M. D. O. l. H. G. b. l. M. D. d. C. A. H. L. g. M. D. 576 pages. Il. trat. d. Th. Blak. D. M. G. w. H. l. B. k. C. l. N. w. Y. k. N. Y. 1955. P. \$12.

This book is the edited transcript of an international symposium, the editing of all papers and discussions having been done by the three editors together with individual authors. In the interest of speedy publication.

The participants in the conference included most of the investigators in the world who have done or are doing significant work in this field. The different opinions therefore constitute an authoritative and up-to-date survey of the present status of growth hormone as well as of recent advances in knowledge and investigative technique. The papers are grouped into several general fields with distinguished investigators who have special interest in these fields designated as discussors.

This meeting was a most interesting event and the discussions were on a detailed technical frequently abstruse level that do not make easy reading and is of little use to clinical practitioners. This volume is important how ever to these research workers in this and allied fields and to medical librarians as a reference work.

—CHRISTIAN GROENBECK Lt. Col. MC USA

NEUROPHARMACOLOGY. Translated by F. t. C. f. 26 27 d. 28 May 1954. P. t. N. J. d. d. by H. l. d. A. A. b. m. s. M. D. Sp. d. by h. J. h. M. a. y. J. F. d. t. N. w. Y. k. N. Y. 210 pages. Il. trat. d. P. d. by M. a. d. P. t. g. C. A. d. N. J. 1955. P. \$4.25.

The published conferences devoted to special subjects in the medical field are well known for their excellence and this one is no exception. Those who are interested in neurophysiology or neuropharmacology will find this book particularly informative. There is clear presentation of progressive research by the authorities themselves plus interspersed comment and discussion by distinguished investigators. It reads and reads like plain field.

This volume elucidates some of the more significant efforts in neurophysiology and the past few years. Appropriately the first discussion is by Dr. Seymour S. Kety, *Considerations of the Effects of Pharmacological Agents on the Overall Circulation and*

Metabolism of the Brain. Such matters as cerebrovascul... resistance vasospasm oxygen carbon dioxide glucose drugs and anxiety are taken up. Dr Ernest A Scharrer follows with a chapter called *Functional Organization of the Brain* in which he emphasizes the variations of cerebral blood flow and the variation of chemical characteristics in different parts of the brain.

Dr Mary A B Brazier indicates in *Studies of Electrical Activity of the Brain in Relation to Anesthesia* that there are different origins or pathways for the electrical activity observed at the cortex. This is followed by Dr Horace H Magoun's *Ascending Reticular System and Anesthesia*. The arousal response and the effect of anesthesia on the central cephalic system are considered. Finally Dr Carl C. Pfeiffer presents *Observations on New Central Nervous System Convulsants*. He discusses the convulsant hydrazides and the possible site and mode of action of convulsants.

In addition to the references given at the end of each chapter the book contains an interesting appendix *Autobiographical Sketches of Participants* —ARTHUR J LEVENS L. Col. MC USA

SHOULD THE PATIENT KNOW THE TRUTH? A Response of Physicians, Nurse, Clergymen and Lawyers. Edited by Samuel Standard M.D. and Helmut Nathar M.D. 160 pages. Springer Publishing Co. Inc. New York N.Y. 1955. Price \$3 hard cover \$2 soft cover.

Twenty-four experienced professional people with extensive clinical experience each portray in this book the circumstances and problems arising when a diagnosis of a fatal disorder is made and the question of communicating this fact to the patient or other responsible persons becomes necessary. How much of the truth should be told, who should tell it and in what manner, and the many weighty issues involved are described in separate chapters by surgeons, internists, psychiatrists, nurses of various specialties, clergymen of different faiths, and experts in law. Each describes how every situation must be individualized. The total person must be taken into account in formulating an approach that will not only discharge the physician's responsibility by permitting the patient to know the truth in time, but that also will not aggravate his condition or prevent him from doing those last things which he needs to do.

Despite what may seem to be a morbid subject, the authors and contributors have developed practical and penetrating expositions of significant situations that could arise. The tender and deeply intuitive insight shown by contributors from the nursing profession in the cases of children and psychotics are welcome and helpful.

This practical volume should be in every physician's library and should be required reading for students of medicine, law, ministry, and the priesthood. It is a book to be read and reread. Profound values are tactfully touched on in many of the contributors' papers, suggesting that an attitude of reverence for man and his needs is a dependable

hallmark of those better equipped to care for them. The experienced physician, the beginner, and all who care for the ill can profit from the guidance to be found in the pages of this book.

—PAUL J. SCHIRADDER, Lt Col MC USA

AIRBORNE CONTAGION AND AIR HYGIENE. A. E. I. g. 1. Study of Dr. pl. Inf. tion by W. H. m. F. th. W. H. 423 page. Il. trat. d. Publ. h. d. f. Th. C. mmo. w. lth. Fund. by Il. va. d. U. cr. ty. P. Camb. dge. Ma. s. 1955. P. \$6.

This monograph details the development of knowledge of airborne contagion from coordinated and systematic research approaches over the past 20 years. It documents and synthesizes the evidence into clear principles, many of which are expressed quantitatively, and points up the relative significance of sanitary ventilation in the dynamic control of airborne contagion. Methods of purification by sanitary ventilation or by use of ultraviolet or aerosol are well described, and the practical applications developed.

Although this work is based strongly on mathematical expressions of the dynamics of contagion and a purification, it is so well organized and developed that the chapters tell a connected story and present a lucid description of air hygiene that a layman can understand. Other chapters are so complete as to satisfy any student of the biodynamic involved. The epidemiologist or any physician faced with the problem of preventing airborne contagion will find this monograph a valuable reference book, illuminating his thinking about the biology, biophysics, and biochemistry of droplet nuclei infection and disinfection, and the role of sanitary ventilation in controlling airborne epidemics.

—ROBERT W. BABIONE, Capt (MC) USN

SOME PHYSIOLOGICAL ASPECTS AND CONSEQUENCES OF PARASITISM. d. d. by W. H. m. F. th. W. H. 90 page. Il. trat. d. R. ge. U. 19. P. N. w. Bru. w. k. N. J. 1955. P. \$2.

This book consists of papers presented at the Eleventh Conference on Protein Metabolism at Rutgers University. They concern classification and interaction of protein metabolism, the specific nature of enzymes of some parasitic protozoa and helminths, and antibody formation in infected hosts.

Investigations were reported by Trager, Moulder, Read, Beding, Telford, and Stab. This group of studies represents significant pointing in the direction of new research yet to be uncovered (the physiology and biochemistry of parasites) rather than fields that have been more thoroughly traversed. —CLAY G. HUFF

ETIOLOGY OF CHRONIC ALCOHOLISM. by O. ka. D. th. Im. M. D. 227 page. Il. us. ra. d. Cha. le. C. Th. ma. P. bl. h. Spr. g. f. Id. Ill. 1955. P. \$6.75.

This research monograph represents the results of a 5 year joint study by a group of physicians, physiologists, chemists, psychologists, social scientists, anthropologists, and psychiatrists. It presents the

etiology of alcoholism as a complex one with multiple mutually dependent variable factors which may play important roles. It stresses the point that alcoholism may not be a primary disease but a symptom of other illnesses that must be understood before proper treatment can be instituted. Proper therapy of each individual patient requires an understanding of the total personality within its biosocial and biophysical environment. The authors point out that the present studies must still be considered as initial observations and that further intensive studies of all factors are essential. The multiplicity of the factors involved indicates why no single specific treatment of alcoholism has been derived.

Excellent chapters on the Psychopathology and Character Structure in Chronic Alcoholism by Dr. Mary Jane Sherfey and the Familial and Personal Background of Chronic Alcoholics by Dr. Manfred Bleuler are definitely worthy of serious study by both investigators and therapists of alcoholism. The section "Biochemical Experimental Investigations of Emotions and Chronic Alcoholism" is primarily a scientific statistical presentation of biochemical factors that only the true researcher can grasp. The interesting account of "Alcoholism in the Cantonese of New York City" presents a biosocial approach relating to cultural and familial attitudes toward the use of alcohol. It fails to present any real investigation into those members of this society who may have become alcoholics.

This monograph should be recognized chiefly as a contribution to the necessary research on chronic alcoholism and should be available for persons who are sincerely interested in chronic alcoholism and the chronic alcoholic.—LUCIO E. GATTO Col. USAF (MC)

RADIOISOTOPES IN BIOLOGY AND AGRICULTURE Principles and Practice by C. L. C. MA. 481 pages illustrated. McGraw-Hill Book Co. Inc. New York, N. Y. 1955. Price \$9.

The stated purpose of this book is "To bring home to the student and investigator an appreciation and understanding of how radioisotopes can fit into their program and then to show how the experimental work can be undertaken." The volume is directed primarily to the biologist, and examples cited are those of interest to him. Limited portions of the book deal with medical applications.

The chapters concerning principles and basic difficulties of tracer methodology are particularly well written and will be of value to anyone interested in the general field. Throughout the book emphasizes various problems that can be solved through the use of isotopes. The author has compiled an excellent bibliography to emphasize particular applications to certain fields of interest.

A listing is included of isotopically labeled preparations provided by the Oak Ridge National Laboratory, but for up-to-date information the investigator should refer to the catalog and price list published

by the Atomic Energy Commission Chapters on autoradiography paper chromatography and ion exchange introduce the basic principle of these techniques

This book will provide a good indoctrination to the student in the field of isotopes However the investigator will require direct reference to the literature —JAMES B HARTGERING Lt Col MC USA

THE ROLE OF HUMORAL AGENTS IN NERVOUS ACTIVITY by Burton M n z
M D Am L t u r S P b l t Numb 240 A M graph
t Ba D f Am L tu Ph ma l gy
Ed t d by Ch y D L k Ph D 230 pag Il trat d Ch l C
Th ma P b l h Sp g f Id Ill 1955 P \$7.75

Professor M n z has written a monograph on a highly controversial subject In some 200 pages the author well known neurologist in the field has attempted to clarify some of the confused ideas about the role of humoral agents in nervous activity He should be congratulated in his handling of delicate matters which have in the last half century been filled with dubious vague hypotheses theories personality clashes and much varied experimentation He makes an honest effort to be without bias giving credit where credit is due but still maintain his own integrity and beliefs

This short treatise makes it possible for a busy scientist in or out of the field to obtain a panoramic view of the subject as it stands today The reader may feel that there were some things that the monograph omitted for further research

The book is handsomely bound written in a personal style easy to read and contains figures from the author's experiments It will find a useful place in a biological library

—ELGFNE B AONFCCI Cap USAF (MSC)

SHEARER'S MANUAL OF HUMAN DISSECTION ed t d by Ch l E T b n
Ph D 3d d t 287 p g 79 figur Th Bl k D
M G w H Il Book C I N w Y k N Y 1955 P \$6

This manual is offered to medical students as a laboratory guide to a textbook of anatomy and supplemental collateral reading in one of the standard descriptive texts is recommended by the editor For the same reason the manual will meet the needs of the specialist studying the detailed structure of particular organs

Only minor changes and a few additions have been made in this third edition The material is well organized and presented according to body region This permits adaptation to meet different plans of instruction The style is concise with directions for dissection a clear illustrations are adequate for their purpose and the format with important terms printed in bold face is especially designed to help the student while carrying out his dissection As a guide this manual fulfills its mission and can be highly recommended for use by medical students —ARTHUR STEER Lt Col MC USA

ANCIENT THERAPEUTIC ARTS The Fitzpatrick Lecture delivered in 1950 and 1951 at the Royal College of Physicians by William Bockbank M A M D (Camb) F R C P 162 pages illustrated Charles C Thomas Publisher Springfield Ill 1954 Price \$5

The subjects chosen for these four lectures were enema administration cupping and leeching counter irritation and intravenous methods of giving drugs The author outlines the history of each form of treatment from its earliest recorded use in the case of the enema for example from about 1500 B C By quotation and anecdote he adds considerable interest to the narrative and introduces a certain amount of humor An outstanding feature of the book are numerous illustrations from old medical texts and from objects in such great collections as the Wellcome Medical Museum the British Museum and the Royal College of Surgeons

The publisher's reproduction of the illustrative material is remarkably fine and the little book is almost a small atlas of the subjects of the lectures Another important feature is the excellent bibliography at the end of each lecture giving a rather extensive list of both articles and books dealing with the subject The binding paper print and even the book jacket are excellent Most medical men and many laymen will enjoy this book and the numerous illustrations that form almost a pictorial history of these ancient therapeutic methods

—LOUIS H RODDIS Capt (MC) USN (Ret)

COUNSELING IN MEDICAL GENETICS by Sheldon C Reed 268 pages W B Saunders Co Philadelphia Pa 1955

A monograph of the practical approach to problems in genetics could come from no source more qualified than the Dight Institute of Human Genetics which has contributed so greatly to the study of hereditary diseases This text serves a twofold purpose first to remind the reader of the necessity of correctly advising patients and parents on questions of heredity and second to provide factual information on Counseling in Medical Genetics

The author exhibits a comfortable style that is informative as well as interesting This text is concisely written in an easily readable format The more common genetic problems are discussed individually with a question and answer session at the end of each chapter These sessions help to clarify the discussion in a brief and stimulating manner Important information is presented by tables that deal with state laws guidance centers and blood grouping The appendix presents a catalogued summary of each hereditary disease An excellent bibliography and an accurate index complete a well edited book

This thesis is of definite value to anyone whose practice deals with either newborn infants or with an active obstetric service It may be used as a desk reference for correctly advising prospective parents However as a genetics text additional fundamental and theoretical discussions would be of value.—PETER W SCHNEIDER Lt Comdr (MC) USN

SURGICAL NURSING by *Eldridge L. Elmer M. D. S. C. D. L. K. F. R. C. S. (Ed.)*
 M. D. S. C. D. L. K. F. R. C. S. (Ed.)
 page 329 11 tr t 1 d g 10 b j c l J B L pp
 i C Phil d lph P 1955 P \$4.75

This well written volume should serve as an excellent textbook and frame of reference on the nursing care of patients undergoing surgical treatment. It was written primarily to present to the nursing student a concept of the comprehensive nursing care needed by these patients. The authors have striven to inculcate an appreciation of the total care of the patient based on an awareness of his social mental physical and spiritual needs.

The book is divided into units according to the functional divisions of the body. The newer advances in cardiac and chest surgery are clearly described with emphasis given to the special nursing problem encountered.

The general presentation and arrangement of the material make for easy reading and reference. At the conclusion of each chapter a clinical question is presented with several related questions and possible answers. This new feature should serve as a review and consolidation of important aspects in surgical nursing care. An excellent bibliography is located at the conclusion of each unit. These are arranged by subject for easy reference.

Although written primarily for the student nurse, the text offers the instructor in surgical nursing a solid guide. It offers the professional nurse a review of the field and it offers the subprofessional student and worker a ready reference. The authors have succeeded in combining a worthwhile authoritive work to the nursing field.

—RUTH L. GREENFIELD C. P. A. N. C. U. S. A.

LABORATORY EXERCISES IN ANATOMY AND PHYSIOLOGY by *Dorothy W. Hutton P. H. D. B. A. M. A.*
 158 pages 11 x 8 1/2 G. P. P. M. S.
 N. W. Y. K. N. Y. 1955 P \$3

This is a 162 page practical manual prepared for the mutual benefit of student and instructor. The author has designed exercises designed to cope with the needs of the exceptional as well as the average student. For the instructor the objectives are centered around two factors: shortening the time required to prepare for basic experiments and adaptability for either a comprehensive or a less intensive course of study.

Suggested equipment and materials for experiments are simple inexpensive and easy to obtain. Diagrams are numerous and clear and blank pages for student notes are conveniently placed throughout the book. Self-study questions appear at the end of each unit. Occasionally these are pertinent and vague.

Although indexes and bibliography are not included this book will doubtlessly serve adequately as a manual for instructor and student.

—LILLIAN B. SCHOONOVER L. I. (N. C.) U. S. N.

New Books Received

Books received by the *U S Armed Forces Medical Journal* are acknowledged in this department. Those of great interest will be selected for review in a later issue.

- STUDIES IN THE FUNCTIONS AND DESIGN OF HOSPITALS** The Report of an Investigation sponsored by the *Nuffield Provincial Hospitals Trust* and the *University of Bristol*. 192 pages illustrated. Geoffrey Cumbelege. Published to the University. Oxford University Press. Amen House, London E. C. 4. Distributed by Oxford University Press, Inc., New York, N. Y. 1955. Price \$15.
- OBSTETRICAL ROENTGENOLOGY** by Robert Berman, M. D., F. A. C. S. Second Volume of a Series of Monographs on Obstetric & Gynecology edited by Claude E. Heaton, M. D. 599 pages, 486 illustrations. F. A. Davis Co., Philadelphia, Pa. 1955. Price \$12.50.
- SALIVARY GLAND TUMORS** by Donald E. Ross, M. D., F. A. C. S., F. I. C. S., F. R. C. S. (Edg.) F. R. C. S. (Edin). 86 pages illustrated. Charles C. Thomas Publisher, Springfield, Ill. 1955. Price \$7.50.
- THE QUANTITATIVE ANALYSIS OF DRUGS** by D. C. Gault, Ph. D. (London). F. R. I. C. 2d edition. 670 pages illustrated. Philosophical Library, Inc., New York, N. Y. 1955. Price \$17.50.
- HOW TO MAKE SHAPES IN SPACE** by Toni Hughes. A recreational craft book with instructions, diagrams and photographs for making three-dimensional geometric cards, posters, garlands, masks, ornaments, toys and decorations of all kinds. 217 pages illustrated. E. P. Dutton & Co., Inc., New York, N. Y. 1955. Price \$4.95.
- SUPRAPUBIC PROSTATECTOMY With Primary Closure of the Bladder** by an Original Method Preparation Technique and Post-operative Treatment by Univ. Prof. Dr. Theodor H. Yntschak. Authorized translation by Noble S. R. Masuf, M. S., M. D., Ph. D. 187 pages illustrated. Charles C. Thomas Publisher, Springfield, Ill. 1955. Price \$8.50.
- ESSENTIALS OF BIOLOGICAL AND MEDICAL PHYSICS**, by Ralph W. Stacy, Ph. D., David T. Williams, Ph. D., Ralph E. Woden, M. D., and Rex O. McMorris, M. D. With an Introduction by Otto Glasner, Ph. D., F. A. C. R. 586 pages illustrated. McGraw-Hill Book Co., Inc., New York, N. Y. 1955. Price \$8.50.
- DEXTRAN: Its Properties and Use in Medicine** by John R. Squire, M. D., F. R. C. P., J. P. Bull, M. D., W. A. Maycock, M. D., and C. R. Rickerts, Ph. D., F. R. I. C. 91 pages illustrated. Charles C. Thomas Publisher, Springfield, Ill. 1955.
- UNDERSTANDING PEOPLE IN DISTRESS: Emotional and Mental Disorders, Their Cause, Care and Cure** by Barney Katz, Clinical Psychologist, and Lois P. Thorpe, Professor of Psychology. 357 pages. The Ronald Press Co., New York, N. Y. 1955. Price \$4.
- THE PRACTICAL NURSE AND HER PATIENT** by Fern A. Goulding, R. N., M. S., and Hilda M. Torrop, R. N., B. S. 326 pages, 45 illustrations. J. B. Lippincott Co., Philadelphia, Pa. 1955. Price \$4.25.

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UNDERSTANDING SURGERY d d d mp l d by R b t E R th b g
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ma ed P k t B k l N w Y k N Y 1955 P \$0 50

HISTORY OF THE COLD WAR by K th l g m 239 page Ph los ph l
L b ry l N w Y k N Y 1955 P \$5

MENTAL HYGIENE IN PUBLIC HEALTH by P l V L mk M D 2d
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THE RELIEF OF SYMPTOMS by W ll M d ll M D F A C P 450 page
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WASHINGTON 1955

Monthly Message

In 1214 the City of Bologna hired Dr. Ugo of Lucca to perform surgery six months each year for the city and in case of war to treat the soldiers free. Little is known about Ugo or where he obtained his education, probably at the University of Salerno. The requirements Ugo established for those striving to become good surgeons were recorded by his son Theodoric (1266). He advised them to

*Frequent the place where skilled surgeons operate to attend their operations diligently and commit them to memory. There is no need for them to be a hindrance, but let them be fore-
sighted, gentle, and circumspect in order that they may operate with the greatest deliberateness and gentleness under all circumstances, especially around cerebral membranes and sinu-
soidal parts and other ticklish places. All the things which are necessary to the art cannot be included in books; cannot easily be
remembered, and many of these frequently happen to the operators.*

How true this is today

Frank B. Berry

FRANK B. BERRY, M.D.
Assistant Secretary of Defense
(Health and Medical)

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Foreword

The United States Armed Forces Medical Journal is the medium for disseminating information from the various branches of the medical profession to the personnel of the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surgeon General of the Veterans Affairs Department are the principal sponsors of the Journal. The Journal is published for the Department of Defense by the Department of the Army, Navy, and Air Force.

FRANK B. BERRY, M.D.

Assistant Secretary of Defense (Health and Medical)

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UNITED STATES ARMED FORCES MEDICAL JOURNAL

Volume VI

November 1955

Number 11

REACTIONS TO INFLUENZA VACCINE

JOHN R. SEAL *Commander (MC) USN*

IN THE FALL of 1954 the Army, Navy, and Air Force announced a program for immunization of all military personnel against influenza. The main objective of this program was to reduce morbidity and noneffectiveness in military units should either influenza A or B become epidemic during the winter. The vaccine, at the recommendation of the Commission on Influenza of the Armed Forces Epidemiological Board, contained equal parts (250 chick cell agglutinating units) of the FM 1 and Conley strains of influenza A viruses, and the Lee strain of influenza B virus. Manufacture had followed the usual commercial methods, the viruses being grown in embryonated eggs, harvested, concentrated, suspended in aqueous solution, and inactivated with formalin.

At the announcement of this program, concern was expressed by a number of medical officers about reactions to influenza vaccines. A few wished to know if the incidence of reactions would not be such as to offset any possible efficacy of the vaccine in reducing noneffectiveness due to influenza. Because of these questions, it seemed worth while to obtain some information on reactions that occurred during the influenza immunization program prior to its repetition.

REACTIONS CAUSING NONEFFECTIVENESS AT TRAINING CENTERS

In early March 1955, just prior to termination of the immunization program for the season, the five Navy and Marine Corps Training Centers were asked to provide the Bureau of Medicine and Surgery with information about reactions to influenza vaccine causing loss of time from duty. The majority of personnel immunized at these centers were new recruits, although the results given in table 1 were for all populations at these centers.

At the Naval Training Center, San Diego, Calif., the 23 reactions were reported as being mild, and consisting of chills and fever following the inoculation. At the Naval Training Cen-

ter Bainbridge Md the two men sensitive to eggs who received the vaccine had urticaria. One was admitted to the infirmary for 1 day. The other also had an asthmatic attack and was hospitalized for 16 days. The remaining three reactions were diagnosed among Waves. One had dizziness and shortness of breath with 1 day of illness, a second headache and chills with 2 days of illness, and the third syncope, nausea and sore throat with

TABLE 1 R t o n s t f l n z v a c u s g l o s f t m e f m d u t y
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NTC Gr Lak Ill	14 531	5	03	1 6	0
NTC Sa D g Calif	24 976	23	07	2 0	0
NTC B b d g Md	28 019	5	02	4 8	2
MCRD Sa D g Calif	9,230	4	04	1 8	0
MCRD P I land S C			49	1 0	0

N a I T g C
S h d d u a l n s s g w h d d w g
q u e n s b o s s a s r y
4 m C p R D p

4 days of illness. In the report from the Marine Corps Recruit Depot Parris Island S C it was also noted that about 80 per cent of personnel receiving the vaccine had one or more of the following symptoms: fever, chills, muscle aches, tenderness at the site of inoculation, or mild nausea, but of insufficient severity to cause admission to the sick list.

OBSERVATIONS AT MARINE CORPS AIR STATION CHERRY POINT N C

A special report was received from the Marine Corps Air Station Cherry Point N C concerning reactions to influenza vaccine. In early January, when the vaccine was first received, 83

TABLE 2 I d n c f p t o c l i
y m p t m 83 m e

Symp m	N m b e	P n t
Ge r a l m a l a i s	61	74
Sw II r m s	61	73
F e	50	60
H d a h	47	57
Ch II	42	50
N u s	25	30
D i a r r h e	11	12
V m g	7	8

hospital corpsmen attached to the dispensary were inoculated. The incidence of postinoculation symptoms reported by the 83 men the following day are shown in table 2.

Some physicians asked if this vaccine, all of which was of a single lot from one manufacturer (A), might not have been unusually toxic. The Officer in Charge, Preventive Medicine Unit No. 2, obtained vaccine made by another manufacturer (B) and assisted in a comparison of the two under conditions in which neither the examiner nor recipient knew which vaccine a man had received at the time he was interviewed for reactions. Fifty-four men were selected for testing, screened for sensitivity to eggs, and examined. Three men had fever and were not inoculated. Administration of the two products was alternated in the remaining 51 men, with 26 receiving that of manufacturer A, and 25 that of manufacturer B.

None of the recipients sought treatment for reactions between the time of administration and 0800 hours the following morning, 21 hours later, when all 51 were again examined. None had fever at this time and all were asymptomatic and fit for duty. Twenty-five of the 26 men receiving vaccine from manufacturer A, and 17 of the 25 receiving vaccine from manufacturer B, reported having a sore arm following inoculation. None of these had abnormal local findings or functional incapacitation. Mild transient general malaise was reported by six men, with no difference between the vaccines in this regard. It was concluded that local reactions, although frequent, were mild and that both vaccines were safe.

Following this study, immunization of the balance of personnel at Cherry Point was completed. Another study was made in 123 enlisted personnel comparing different lots of vaccine from manufacturer A. No difference in the incidence of symptoms was reported by men receiving different lots.

Two hundred officers were also questioned regarding symptoms after inoculation, and their replies are reflected in table 3.

TABLE 3. *Symptoms following inoculation in 200 officers*

Symptom	Number	Percent
Swollen arm	100	50
General malaise	83	42
Fever	61	31
Headache	53	27
Chills	40	20
Nausea	21	11
Vomiting	3	2
Diarrhea	3	2

Of the 200 officers 13.5 percent reported time lost from duty varying from 15 minutes to 8 days although none were admitted to the hospital. Several were temporarily withheld from flying as a result of reactions.

In all 8,000 personnel were vaccinated against influenza at this station with 10 men diagnosed as having reactions to the vaccine admitted to the sick list. Seven of those 10 were later shown to have been ill prior to being vaccinated.

The medical officer's report ended by stating that the rather high incidence of reactions among hospital corpsmen probably had some influence on the reported incidence of reactions in other groups. The rumor had spread that the Medical Department was concerned and in consequence unpleasant aftereffects of vaccination were expected and probably searched for.

DISCUSSION

From all indications the influenza virus vaccine administered to military personnel during the winter of 1954-1955 was responsible for a relatively high incidence of mild local symptoms and a lesser incidence of mild systemic symptoms but rarely caused a reaction of sufficient severity to necessitate hospitalization or loss of time from duty. Such symptoms as did occur were transient and even the more severe reactions did not last more than 24 hours in nearly all instances. Anaphylactic type reactions were not reported except in the two instances where the vaccine was administered to persons with pre-existing sensitivity to eggs.

The experience reported at the Marine Corps Air Station Cherry Point, N. C., was similar to that observed by others who have interviewed personnel in the postinoculation period. Only 9 percent of a group of 550 students at the University of Minnesota vaccinated with influenza vaccine during the winter of 1944-1945 stated that they had no reaction. Local reactions were experienced by 91 percent and systemic reactions by 18 percent. In a control group of 539 students inoculated with normal saline solution containing formalin and a preservative in the same concentration used in the influenza vaccine, 10 percent had local reactions and 0.7 percent systemic reactions. These "reactions" consisted only of pain and local soreness of the arm on the day of inoculation in most and only 4 students were sufficiently ill to require hospitalization for from 12 to 24 hours. At the University of Michigan in the same winter 48 percent of students inoculated with influenza vaccine had systemic symptoms and 73 percent had local symptoms. A more recent observation on a larger group of adults was made in England during the winter of 1952-1953. A total of 6,340 including 1,303 personnel of the Army and Royal Air Force were vaccinated. Local reactions classified as moderate and interfering with normal

activity were reported in 2.6 percent of persons vaccinated, and general reactions of the same degree in 1.2 percent. Local reactions classified as severe and causing absence from work were reported in 0.1 percent of persons vaccinated and general reactions of the same degree in 0.5 percent. It was noted that large variations occurred among various groups of individuals, and that an equal or higher percentage of reactions occurred in persons given a control bacterial vaccine.

Some of the immediate stinging and burning following inoculation is probably due to the formalin content of the vaccine and, as indicated in the experience of the University of Minnesota, some part of the local and systemic symptoms are probably not related to the virus content of the vaccine. A majority of the systemic and local symptoms, however, have been shown to be related to the influenza virus content of the vaccine and are unavoidable unless ways are found to reduce the virus protein content without impairing the antigenic potency of the vaccine.

Because the primary purpose of immunizing military personnel against influenza is to reduce noneffectiveness during influenza epidemics, when 10 to 20 percent or more of the personnel may have a febrile illness of several days' duration, the comparatively minor nature of local and systemic reactions reported during the winter of 1954-1955 would not seem to offer any obstacle to continued use of the vaccine.

SUMMARY

Reports on the incidence of reactions to influenza virus vaccine used in military personnel during the winter of 1954-1955 were obtained from the three Naval Training Centers and two Marine Corps Recruit Depots. Reactions eventuating in admission to an infirmary or hospital occurred in less than 0.05 percent of personnel immunized. Further studies were reported from a Marine Corps Air Station indicating that a high percentage of recipients of the vaccine had transient, mild, local, and systemic symptoms with relatively little incapacitation or loss of time from duty.

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matography and color identification tests. The procedure is designed to show the presence or absence of opium alkaloids particularly morphine and codeine in urine. However modification of the procedure permits the analysis of other biologic specimens *e g* blood and tissue.

Heroin if taken will be detected as morphine due to the conversion of heroin to morphine by deacetylation during the metabolic processes and to the hydrolysis of any unmetabolized heroin in the specimen to morphine during the analysis. The hydrolytic process in the analytic procedure is necessary to free the alkaloid from the conjugate excreted in the urine so that the morphine may be extracted and identified.

DIMETHYLAMINODITHIENYLBUTENE

3 Dimethylamino-1,1-di(2-thienyl)-1 butene is a synthetic chemical possessing addiction-forming and addiction sustaining properties similar to morphine. As might be expected by its structure this chemical possesses antihistaminic activity and as would not normally be expected from its structure also possesses analgesic effects similar to morphine. It is available in Japan under various trade names *e g* ohton, asmarel, shikiton, reston, monapan, hopiton, haldon, tel and barodon T. These products have been placed under the narcotic controls in Japan and are controlled by the Japanese government in the same manner as morphine or codeine. In the United States a Presidential Proclamation has placed dimethylaminodithienylbutene within the scope of the narcotic drug acts of the United States.

As in the United States legitimate products in Japan are sometimes diverted to illegal channels and instances occur in which personnel subject to military law illicitly use this drug instead of or in addition to heroin and the other available drugs. Dimethylaminodithienylbutene is distributed in an injectable dosage form in amber glass ampules to which are affixed the manufacturer's label. The solution in the vial may be pink in hue or if old may have some dark turbidity due to decomposition of the chemical which is unstable in heat or light. As this product is always taken by injection users will have needle marks and will frequently exhibit symptoms associated with heroin or morphine intoxication. The users are sometimes found in a comatose state. Urine excreted by a person taking this drug may be dark green or purple-black in color.

At this laboratory in 1954 a method was devised for the detection of the chemical in the urine of those taking this drug. The urine is subjected to a process of extractions without prior hydrolysis followed by paper chromatography of the extract and finally color identification tests which give characteristic reactions.

MEPERIDINE HYDROCHLORIDE

Meperidine hydrochloride, commonly known in the United States under its trade name of demerol is found in Japan among United States military personnel primarily as an item obtained from military medical supply channels. Instances in which it is illegally used are confined primarily to members of the medical services of the armed services. Meperidine hydrochloride as obtained from medical supply is easily identifiable by its label on either the multiple dose vial or the single dose ampule. Manufactured in Korea under the names neo-berinel and neo-dolentin, it has been found in the possession of military personnel stationed there.

The dosage form of meperidine hydrochloride available is the injectable type and, therefore, a user should bear needle marks. The clinical symptoms associated with use of this drug are similar to those of heroin or morphine.

An examination of the chromatograph prepared for an opium alkaloid analysis of a urine specimen² will indicate the presence of meperidine hydrochloride at the appropriate R_f or position on the paper. The drug is stable to acid hydrolysis and is extracted from urine at the same time morphine or codeine is extracted. After paper chromatography, color and microcrystalline precipitation tests are used for final identification.^{3,4}

MARIHUANA

As one of the several varieties of *Cannabis*, marihuane is found in Korea primarily because of its occurrence as a domestic crop for the production of hemp. Small quantities of marihuana have been found in Japan and presumably have been smuggled in by personnel coming from Korea or from the United States. Marihuane is smoked usually as a cigarette or "reefer," or sometimes in a pipe. The cigarettes are hand rolled and crimped. Hashish, the resin obtained from the *Cannabis* plant in the Middle East, has not been found in possession of military personnel within the Far East Command.

Marihuane leaves are always smoked and may produce eggregious tendencies and stimulation of the senses in such a manner that external stimuli are magnified and distorted. A marihuana smoker may have discernible characteristic black stains on the thumb and index finger tip analogous to the yellow brown nicotine stains on the fingers of tobacco users. A method is available for the detection of marihuana users based on chemical reactions to petroleum ether washings of the finger steins.^{5,6} A procedure to detect marihuane users by analysis of urine specimens is under investigation. This procedure is based on an extraction of the urine by an appropriate solvent and color tests applied to the extractive.⁷

METHAMPHETAMINE HYDROCHLORIDE

Methamphetamine hydrochloride a sympathomimetic amine is used extensively by the Japanese² and by a few military personnel in Japan. It was previously manufactured legally in Japan under the trade names philopon bilopon biropen helopon hoapitan methyl pronamin neoagotia takarapitan and fukuzedrin. These names have been applied by common usage to all methamphetamine hydrochloride injectables that are now available on the illegal drug market in Japan. This drug is generally administered by injection. It is distributed as a 1 percent aqueous solution in 2 to 3 ml clear glass ampules without a label when manufactured illegally and is sold at prices ranging from 20 to 50 yen (5 to 15 cents). The chemical itself is clandestinely prepared by chemists with laboratory facilities and supplied to the packagers or vendors who prepare the solution and place it in vials under such conditions that their products are unsterile and unsafe for use. In Japan methamphetamine hydrochloride is usually synthesized from either natural or synthetic ephedrine.

The Japanese government has passed laws and regulations prohibiting the sale and use of this drug and has placed enforcement of these laws under the narcotics section of the Ministry of Health and Welfare.

It is reported that on withdrawal of the drug Japanese philopon addicts have in numerous cases suffered symptoms similar to morphine withdrawal symptoms. These symptoms have varied in duration from 1 to 30 days and in a few cases up to 3 months; however, others have had no withdrawal symptoms.

A philopon or methamphetamine user will bear nonpuncture marks on the extremities. While under the influence of the drug a user may have dilated pupils and may or may not be violent or aggressive and suffer from hallucinations or psychoses. It has been reported by Japanese medical and health authorities that users of philopon will eventually develop serious psychoses exemplified in the first stages by hallucinations induced by external stimuli and later by hallucinations without any stimuli whatsoever.

An analytic procedure for the detection of this drug¹ was developed in 1954 at this laboratory which could be used routinely on a large number of urine specimens in conjunction with the analysis for opium alkaloids and using the same urine specimen. Methamphetamine hydrochloride is absorbed onto activated charcoal during the course of the opium alkaloid analysis and subsequently is eluted, chromatographed and subjected to color identification tests for methamphetamine.

BARBITURATES

Several different barbiturates have been detected in specimens obtained from military personnel or dependants, and barbiturates in their dosage forms have been found in possession of United States personnel or at the scene of suicides. Barbiturates are from two sources, the military medical supplies and the Japanese market. Most of the barbiturates available in the United States are also manufactured in Japan and are available on the Japanese market. However many of the barbiturates extensively used by the Japanese are not commonly prescribed in the United States. The barbiturates used in military medical facilities are of course, those which are most commonly used in the United States. Military medical supply has available such common barbiturates as phenobarbital, secobarbital, amobarbital, pentobarbital, at cetera, while on the Japanese market the most common barbiturates found are ethylcyclohexenyl barbiturate, dimethylcyclohexenyl barbiturate, phenobarbital, and pentobarbital.

Barbiturates are prepared in tablet, capsule, and powder form for oral use and in aqueous solution for intravenous injection. The barbiturate dimethylcyclohexenyl, known as cyclopan or chickapon, has been reported in the Japanese press and law enforcement agencies as being used extensively by drug addicts in place of heroin or pholipon. Military personnel have been found to be using this drug either alone or in conjunction with other drugs obtained from the illegal drug market. The other barbiturates, such as amobarbital, secobarbital, phenobarbital, pentobarbital, and ethyl cyclohexenyl barbiturate, have also been detected in specimens obtained from personnel in or with the armed services.

Barbiturates are extracted from the specimens at appropriate pH and a spectrophotometric examination is made¹¹ to give conclusive identification, a series of color reactions are used.¹² A system of extraction has been devised whereby a specimen can be analyzed qualitatively for barbiturates concurrently with an analysis for opium alkaloids, methamphetamine hydrochloride, and dimethylaminodithienylbutone. It has been found that by using the combination of spectrophotometric data and color reactions a positive identification is possible for barbiturates, which have heretofore been unidentifiable by either spectrophotometric or color reaction methods as applied to the toxicologic specimens received.

UREIDES

Ureides are commonly used by the Japanese as sedatives, either alone or in conjunction with some of the milder barbiturates. Among the ureides are those commonly known in the United States as carbromal and bromural (bromodichylacetylurea and α -(bromo-

isovaleryl)-urea respectively) Two additional ureides are also commonly used in Japan these are acetylhomodiethylacetylurea and homodiethylpropanylurea The barbiturate perhaps most frequently associated with the ureides is pentobarbital The ureides or ureide-barbiturate combinations occur most frequently in Japan as tablets or powders for oral administration There have been several instances in which suicides have been attempted through an overdose of these products

Ureides taken orally act as a depressant and cause drowsiness An overdose will produce coma accompanied by constriction of the pupils Most suicide attempts with ureides have been unsuccessful apparently because of insufficient dosages

In numerous instances stomach contents blood or urine are submitted for toxicologic examination for identification of an ingested drug A system of analysis has been devised to be applied to these specimens for the identification of ureides either alone or in combination with barbiturates following the method presented in the literature for analysis of the dosage forms¹⁹⁻²² Identification tests have been applied to the extractives based on the data given for ureides in *The National Formulary*²³ and *New and Nonofficial Remedies* as they are applied to pharmaceutical dosage forms The process of analysis consists essentially of extractions each at appropriate pH followed by tests for chemical and physical properties

PENALTIES FOR USE

Military personnel in the Far East Command who unlawfully use heroin meperidine hydrochloride dimethylaminodithienylbutene methamphetamine hydrochloride or barbiturates may be tried by court-martial under The Uniform Code of Military Justice²⁴ The use or possession of heroin is tried under Article 134 as a violation of a Federal statute while use or possession of the other drugs is tried under Article 92 as a violation of a lawful general order although in most cases it could be tried under Article 134 which is the more serious charge

UTILIZATION OF ANALYSES

Results of the various analyses for unlawful drugs are used primarily by the Army Air Force and Navy law enforcement agencies to prove definitely that a person has used drugs when he has been found in possession of them or has indicated in some other way that he is a user Of course in numerous cases negative reports on persons may serve to exonerate them at least for a time

In the event of a positive finding of one or more drugs the result is incorporated into the case report which is forwarded through channels by the investigative agency to the individual's unit.

The unit then initiates such action as it deems appropriate following the recommendations of the investigating officer. The usual action is trial by a court-martial, and on conviction a period of confinement and/or separation from the service.

In many cases during the course of a general court-martial the toxicologist or chemist must prepare a deposition or appear in the court as an expert witness. In recent months the United States Court of Military Appeals has recognized evidence, obtained by the methods used by this laboratory for the detection of opium alkaloids, as being valid and conclusive. The most frequent objection to this evidence is the chain of custody of the specimen from time of collection until the final analysis. To overcome this objection elaborate paper work and administrative procedures are required.

Findings of unlawful drugs in the autopsy specimens of a person can lead to a determination of "Misconduct" and "Line of duty," which results in loss of the 6-months' gratuity pay to survivors. Of importance to the pathologist performing the autopsy is the assistance these tests provide in determining the cause of death.

NARCOTICS STATISTICS

From January through December 1954 about 4,000 specimens, excluding autopsies, were analyzed for the presence of opium alkaloids. From this series of specimens it was found that 441 persons had taken opium alkaloids, as represented by positive reports on 559 specimens. During the year 1953 about 3,000 specimens were analyzed for opium alkaloids, of which 705 contained the narcotics. In numerous cases it has been observed that several specimens taken from the same person at different times and from different localities have been positive for opium alkaloids or other drugs.

A survey in the Yokohama area¹ of military subjects who were narcotics users disclosed that of 164 subjects 76 percent were Negroes and the remainder Caucasians. The average level of education was 10 years of schooling, and the average age was 23 years. In almost every instance the subject's first introduction to drugs was by a prostitute, but sources thereafter included other "pushers." This does not necessarily reflect command-wide findings. A tri-service survey of the Far East Command established that 20 percent of military users were introduced to the drug by prostitutes, 39 percent by service friends, 21 percent by civilian friends, and 20 percent by peddlers.²

Four percent of the subjects voluntarily turned themselves in as users in order to obtain help or cure, while the remaining 96 percent were detected by the Military Police. About 38 percent were arrested by the Military Police for such violations as AWOL,

disorderly conduct, or drunkenness and subsequent search or questioning disclosed use of drugs. The remaining 58 percent were arrested as a direct result of Military Police criminal investigators efforts. No detailed study has been made on the users of central nervous system stimulants or barbiturates.

Interesting and informative data have been published by the Japanese Ministry of Health and Welfare concerning the use of philopon in Japan. A report published for September 1954¹ indicated that in that month there were over 123 000 former users reported and over 2 000 current users. The majority of the users were men between 20 and 22 years of age. These persons used from 1 to over 100 vials of philopon per day. It is interesting to note that the three main reasons given by these persons for starting to use the drug were their own curiosity, the urgings of friends, and the drug's purported aphrodisiac properties. It is also interesting to note that many of those who stopped using it are stated to have stopped voluntarily. In a report by the Tokyo Metropolitan Police on philopon users it is revealed that of 1 747 juvenile users 426 have been involved in such crimes as larceny, violent assault, robbery, rape, and murder while presumably under the influence of this drug. Numerous philopon addicts are in Japanese mental institutions for psychiatric therapy or as criminally insane.

DEATHS

From January 1951 through December 1954 a total of 50 deaths in the Far East Command due to opium alkaloid poisoning, as definitely shown by toxicologic and pathologic examinations at autopsy, were reported through this laboratory. The distribution of these deaths by year and by branch of service is shown in table 1.

TABLE 1 Autopsy findings for opium alkaloids

(from January 1951 through December 1954)

Branch of service	Age				Total	
	1951	1952	1953	1954	Number	Percent
Army	7	9	11	8	35	70
Air Force	1	2	3	1	7	14
Navy	0	0	0	1	1	2
Marine Corps	1	0	2	2	5	10
DAC	1	0	0	1	2	4
Total	10	11	16	13	50	100

The ages of the deceased ranged from 19 to 40 years with an apparent peak in the early 20 s, probably related to the predominance of this age group in the armed services. Seventy six percent of the deceased were Negro and the remainder Caucasian. In 75 percent of the cases in which the person was dead on discovery, the bodies of the victims were recovered from houses of prostitution. The remaining 25 percent of the victims were found in hotels, latrines, alleys, and parks. In spite of the fact that addiction to morphine frequently leads to loss of libido, 45 percent of the victims were involved in some type of sexual act immediately prior to or at the time of administration of the drug.

On toxicologic examination, significant concentrations of ethyl alcohol are frequently discovered in conjunction with morphine. The concentrations of ethanol usually found in these cases were suggestive of some degree of intoxication prior to or at the time of narcotic administration, however usually it was not enough to produce acute alcohol poisoning as such. In these cases ethanol taken concurrently with morphine, heroin or codeine probably produced a synergistic effect on the central nervous system and perhaps accelerated and deepened the depressant action of the alkaloid. In connection with this observation it should be mentioned that recently there have been several instances, described in Denmark, of death occurring a few hours after morphine injection into persons with alcohol concentrations far below the accepted lethal doses for alcohol.² In these cases, morphine in the usual dose of 20 mg had been administered to aggressive and excitable alcoholics as a sedative, but its use resulted in the patients' deaths.

The essential criteria for establishing the diagnosis of acute opium alkaloid poisoning is isolation of one of the alkaloids from body fluids or tissues because the autopsy findings on gross or histopathologic examination are not specific for any of these alkaloids. Indicative gross and histopathologic changes are noted in table 2 and are frequently found in persons who have died of acute opium alkaloid poisoning. At autopsy the general appearance is that found in asphyxial death.

It is not unreasonable to suspect virus hepatitis as a complication due to disregard for sterile technic at time of injection of the drugs. On autopsy, some persons were found to have jaundice and hepatitis which in some instances may have been a complicating factor in their deaths. Septicemia also may occur in some cases as a result of contaminated injections.

It should be kept in mind that if the addict remained in coma for a long period of time an attempt usually was made, by local physicians or occupants of the house where he lay, to revive him with analeptic drugs, stimulants, or other undisclosed treatment.

TABLE 2 *Indicating the depth of the bag*
p um lk l d d th

Ch g foud t t psy	P ce f p
P lmonary d ma	78
P l m ary g t	62
Ce b l ge t	25
Portal h pat lymphad	25
P p rt l h pat f l t	19
P p l tr ct	22
V p tur ar g f tr mt	62
Uppe t m u	43
L w tr mt	19
Thr mbophl b t d bl ca f	9
S bent neou d nt mus ula n-	
j ca	13

There is always the possibility that at this time a hepatotoxic agent may have been given or that some other agent may have been administered which complicated the picture

Recently N allylnormorphine has been added to the items of medical supply for use as an antidote in opium alkaloid poisoning. The use of this drug on persons in the latter stages of asphyxia has resulted in complete and dramatic recovery within a very short period of time

SUMMARY

Illegally used drugs found in the Far East Command are primarily heroin marihuana meperidine hydrochloride dimethylamino dithienylbutene methamphetamine hydrochloride and barbiturates. These products are inexpensive and readily available. The persistently directed efforts of the investigative and law enforcement agencies of the armed services using sensitive methods of detecting drugs in the urine of the users may act as an effective deterrent to experimentation by susceptible persons.

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Research has been called good business a necessity
a gamble a game It is none of these—it is a state of mind
—Martin T Fischer

TABLE 2 *Indicative signs and symptoms of drug poisoning*

Characteristic signs and symptoms	Percentage of cases
Pulmonary edema	78
Pulmonary congestion	62
Cerebral edema	25
Portal hypertension and lymphadenopathy	25
Pericardial effusion	19
Pleural effusion	22
Ventricular arrhythmias and extrasystoles	62
Upper extremity tremor	43
Lower extremity tremor	19
Thrombophlebitis and bleeding	9
Subcutaneous edema	13

There is always the possibility that at this time a hepatotoxic agent may have been given or that some other agent may have been administered which complicated the picture.

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Illegally used drugs found in the Far East Command are primarily heroin, marijuana, meperidine hydrochloride, dimethylamino dithienylbutene, methamphetamine hydrochloride, and barbiturates. These products are inexpensive and readily available. The persistently directed efforts of the investigative and law enforcement agencies of the armed services using sensitive methods of detecting drugs in the urine of the users may act as an effective deterrent to experimentation by susceptible persons.

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BLEEDING TIME VS HOURS POST INFUSION 1080 cc 6% DEXTRAVEN

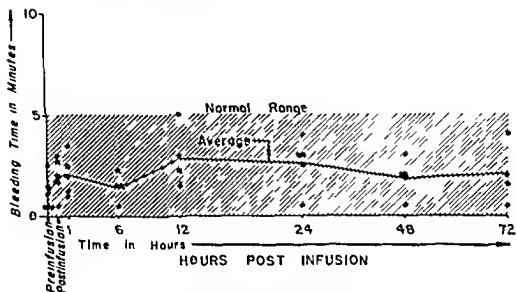


Figure 1 In no instance does the bleeding time exceed the upper limits of normal (5 min.)

In only one patient was a hypotensive effect noted. This moderate blood pressure rise was impossible to evaluate for it occurred in a patient with mild essential hypertension. No other untoward reactions were noted.

Serial studies of plasma dextran concentration are shown in figure 2. At the end of the 72 hour period the plasma dextran level was about one third its postinfusion level.

PLASMA DEXTRAN CONCENTRATION VS TIME

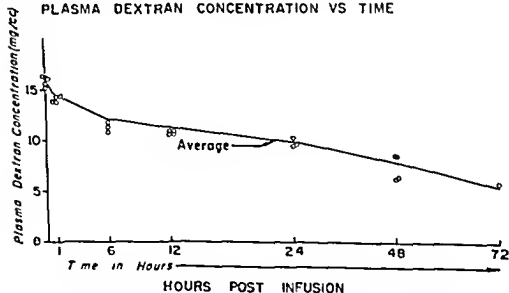


Figure 2 The average plasma dextran concentration at the end of 48 hours is 9.8 mg/cc

Expansion of the plasma volume is indicated by the depression in the hematocrit and in the plasma protein concentration (table 1). The two results are not identical but reflect the changes in plasma volume.

TABLE 1 Comparison of the changes in hematocrit and plasma protein concentration

Hematocrit (%)	Hematocrit (%)	Plasma protein (g/dl)
Initial	Initial	Initial
0	15	18
1	14	20
6	15	22
12	14	19
24	10	12
48	10	14
72	9	8

The percentage of administered dextran which was excreted by the kidney is shown in figure 3. There was a moderate variation among patients in the rate of excretion, the average being 17.8 percent at 72 hours. The relatively rapid excretion in the early hours after infusion presumably reflects the rapid passage of the smaller molecules across the renal barrier.²

PERCENTAGE OF ADMINISTERED DEXTRAN IN URINE (Cumulative)

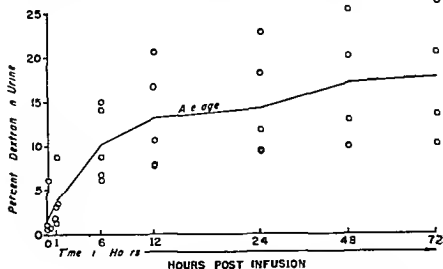


Figure 3. Only small percentage of the dextran is excreted in the urinary tract.

DISCUSSION

The lack of abnormal bleeding in this study is interesting in that previous authors have found that not infrequently there is a marked hemostatic defect produced by other dextran preparations, which these authors have attributed to plasma retention of the large molecules,² or to the degree of retention or metabolism of dextran in the tissues.³

The length of effective circulatory support is reflected by the sustained plasma dextran concentration and the duration of the depression of the hematocrit and the plasma protein concentration. An estimate of the original plasma volume (45 cc/kg of body weight) corrected serially by the depressions in hematocrit and plasma proteins, in conjunction with the plasma dextran level, gives a rough means of estimating the percentage of the dextran which has been retained in the plasma. This calculation is shown in figure 4. It will be noted that an average of 34.5 percent (calculated) of the total administered dextran is still circulating at

PERCENT OF ADMINISTERED DEXTRAN RETAINED IN PLASMA

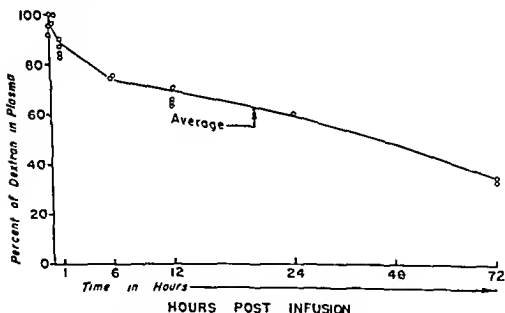


Figure 4 This calculation demonstrates the slow removal of the dextran from the circulatory system.

the end of 72 hours. The percent of the administered dextran unaccounted for in plasma and urine is shown in figure 5. This percentage is metabolized,⁷ stored or lost through other excretory pathways.⁸ It is of importance to note that this percentage includes nearly one half of the administered dextran at the end of 72 hours and that a relatively small part is excreted via the urinary tract.

PERCENT OF ADMINISTERED DEXTRAN UNACCOUNTED FOR IN URINE AND PLASMA

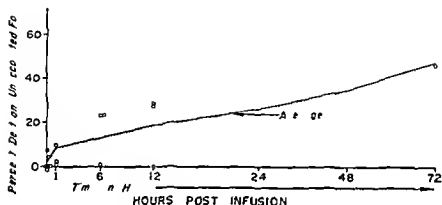


Fig. 5. A large fraction of the dextran metabolized or lost

CONCLUSIONS

This high molecular weight dextran preparation caused in this study no untoward bleeding or other deleterious manifestation. The dextran supported the circulation for a prolonged period of time, about one third of the dextran being retained in the plasma at the end of 72 hours.

A relatively small, although significant amount of the dextran was excreted via the urinary tract, averaging 17.8 percent (cumulative) at the end of 72 hours. The largest percentage of this dextran was metabolized, stored or lost through excretory pathways other than the urinary tract.

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PSYCHOSOMATIC DIAGNOSIS

CHARLES S. MULLIN, Jr. *Commande (MC) USN*

PSYCHOSOMATIC conditions are among the commonest of the illnesses encountered by the service physician. Yet it is my opinion that considerably more time, energy, and anxiety are expended by the average medical officer in a search for organic factors to explain the symptoms arising from an emotional disturbance than is necessary to arrive safely and soundly at the correct diagnosis. No rational physician, regardless of specialty, would hold that a careful effort to exclude organic disease is not necessary. The point is that this effort is unnecessarily prolonged and inefficient.

It is indeed a tragedy to mistake the symptoms of gastric carcinoma for neurotic dyspepsia, but neither is it of benefit to subject a nostalgic recruit to a laparotomy when his abdominal pain and vomiting are expressive of a yearning for home and mother rather than indicative of some primary intra-abdominal disease.

This article is an attempt to describe a more efficient and positive approach to the diagnosis of psychosomatic conditions. Perhaps the commonest reason for the missed or delayed diagnosis is that the possibility of emotional determination simply is not seriously entertained. But when the physician considers that the symptoms at hand may be of emotional origin, it is of value to elicit evidence of basic pathologic anxiety. It is true that some patients with predominating hysterical symptoms may manifest little or no anxiety—at least as long as the hysterical symptoms continue in force—but these are relatively few. The average patient with functional symptoms will show evidence of basic anxiety, even though he neither admits "nervousness" nor feels it.

OBJECTIVE EVIDENCES OF ANXIETY

Signs of undue tension should be looked for (due consideration being given of course to the possibility that some degree of autonomic overaction may be the result of the examination situation itself or other extraneous influences). The tense "nervous" manner, the rapid beating of the carotid pulse, paling and flushing, dilated pupils, tremor of the hands, hyperhidrosis, cold moist hands, various aberrations of breathing (for example, sighing, rapid shallow or irregular respiration), and acropinking are useful findings.

in this connection. The pounding quality of the heartbeat on auscultation without much increase in rate may be significant. One of the more useful indications is palmar sweating. Cold sweating palms especially in the absence of much sweating elsewhere is a pretty sure indication of anxiousness and is often found in patients who do not choose to acknowledge nervousness because of a reluctance to have symptoms degraded as mental in origin or in patients who do not *feel* any anxiety. Sweating of this kind is of particular diagnostic value if the patient realizes that the condition has been present since the beginning of his preoccupying complaints.

SUBJECTIVE MANIFESTATIONS

In addition to these objective physiologic evidences of anxiety it is important to inquire about the presence of certain subjective manifestations one or more of which are invariably present in psychosomatic disorders. These include undue consciousness of heart action, ready breathlessness, increased frequency of micturition, easy fatigability, pressure head sensations, postural dizziness, impaired concentration, shakiness on exertion, restless sleep, impaired appetite, morning nausea or vague gastric distress. Any of these symptoms may be a reflection of an organic disease, but in psychosomatic diagnosis if none of these corollary manifestations are present in addition to the main complaint, some doubt justifiably may be cast on the assumption of psychogenesis. Those symptoms are especially valuable if they have been noticed only since the patient's presenting symptoms have troubled him. The point is that such symptoms often are not mentioned by the patient, asked about by the physician or given due consideration if elicited.

It is of some importance to inquire into the past history for evidence of neurotic predisposition. This predisposition may be discerned in the sphere of behavior or of symptomatology. Inquiry can be made into the patient's familial, social, sexual, occupational and marital adjustments because the majority of neurotic patients (with the possible exception of some conditions precipitated by severe battle or other traumatic experiences) will show clear evidences of some failure of adjustment in one or more of these areas.

Inquiry should also be made as to the existence of so-called neurotic traits for example frequent nightmares, sleepwalking, excessive nail biting, prolonged thumb sucking, enuresis, et cetera. Of somewhat more significance in the background is the existence of suggestive psychosomatic symptoms in the past. It is well to look for a past history of frequent headaches (often of the sick variety), capricious appetite, frequent gastric distress, frequent

dizzy spells and fainting attacks, undue consciousness of heart action tendency to breathlessness, lack of physical stamina out of proportion to physical build ready fatigability, susceptibility to frequent colds, tendencies to headache and vague rheumatic pains, menstrual difficulties in women, et cetera. Whenever possible it is useful to evaluate these manifestations in the light of the patient's life situation at the time of their occurrence.

Some consideration should be given to the family history. Except in so-called traumatic neuroses it is rare indeed to encounter a neurotic patient whose life history does not reveal evidence of some disturbance of his childhood relationships with his parents. Rejective overprotective, seductive repressive, dominating, overindulgent parental types in various combinations are invariably encountered in the history of psychosomatic as well as in all other neurotic conditions. In addition the frequency with which symptoms resembling the patient's principal complaint are also found present in one or more members of the family is striking. This is especially true in the case of headaches, "rheumatic" manifestations and gastrointestinal disorders. (In a study of 50 unselected cases of British soldiers suffering from neurotic dyspepsia (gastrointestinal series negative) I found a history of chronic gastric disturbance in at least one member of the immediate family in over 70 percent of the cases.)

The careful consideration of the special features of the presenting symptomatology itself is most helpful in arriving at the correct diagnosis. The presenting complaints most commonly encountered at least in military practice fall into the following groups: (1) headache (2) gastrointestinal (3) cardiorespiratory and (4) neuromuscular ("rheumatic").

HEADACHE

The vast majority of headaches seen at sick call are psychologically determined although often the medical officer's first thought is to order roentgenograms of the sinuses and an ocular refraction. There are probably three principal mediating mechanisms producing this kind of headache acting singly or in combination, viz: (1) vasomotor changes involving intra and extra cranial arteries (2) mild continuous spasm of the scalp and neck muscles and (3) a "mental image" of pain—the emotional elaboration of sensations of local tension or discomfort into a severe "painful" experience.

Of these three mechanisms the last two acting together probably underlie most neurotic headaches. This "scalp muscle tension-mental image" type of headache has certain typical features. While it may involve any or all parts of the head there is usually an emphasis on the back of the head and neck. The pain

is typically dull steady although sometimes the dynamic pulsation of scalp blood vessels through the tense musculature creates a rhythmic throbbing quality to the headache. It is usually associated with a feeling of tightness or pressure. The muscles of the back of the neck often feel stiff. There is some increase of pain on anteroflexion of the neck and tenderness of the muscles of the posterocervical region and often of the trapezius area. The pain and pressure sensations are markedly aggravated by noise unpleasurable excitement (pleasurable excitement usually has an opposite effect) heat and exertion. Usually the patient thinks that the headache "causes" his nervousness and irritability rather than the reverse. But often he does recognize that anger frustration and anxiety may precipitate or greatly aggravate his symptoms and this relationship should always be investigated. A significant pointer when elicited in the tension type of headache is the effect of wearing headgear. Many patients are quite intolerant of any pressure. In an exaggerated instance a patient of mine was constantly being reprimanded because he could not bear the weight of his light sailor cap and insisted on walking about the compound holding it in his hand. Finally this variety of neurotic headache is invariably relieved temporarily by procaine injections.

GASTROINTESTINAL

Complaints referable to the upper gastrointestinal tract especially to the stomach are very common and incidentally are found more often on the medical rather than on the neuropsychiatric wards. Lower bowel involvement is relatively less frequent. There are some typical features of the symptomatic picture of a psychologically determined nonulcerative gastric disorder as seen in service personnel and this will be described. It must be emphasized however that while neurotic disturbances may mimic almost any organic disease of the abdominal cavity on the other hand certain organic diseases can give rise to a picture resembling the symptomatic pattern to be described. Therefore too heavy reliance should not be placed on this one feature of the entire picture and any patient over 35 who complains of chronic dyspeptic symptoms should have a thorough radiologic survey. However taken in conjunction with other elements of the total picture a consideration of the descriptive aspect of the presenting complaint is of much value. The pain is diffuse and vaguely described. It comes on within an hour after meals. Food aggravates rather than alleviates this pain and the effect of alkalis is quite variable. There are inconsistencies in the type of food indicated as especially irritant. Usually heavy fried or greasy foods are avoided but often preconceived notions are determinant and one patient who can digest milk is unable to take eggs apples but not oranges bacon but not fried ham broccoli but not spinach et cetera. A fair to good appetite prior to sitting down to the meal followed by a

loss of appetite or even revulsion at the sight of food or after a few mouthfuls is characteristic. "The food seems to stick on the way down," "lays heavily on the stomach" and "it does not seem to digest properly." Quivery, tremulous and "nervous" feelings in the stomach are often described. A recognition of the relationship between emotional tension and an aggravation of symptoms is frequently present. Morning nausea is often common. Vomiting is also common—usually within an hour after taking food—and often relieves the distress immediately.

A word might be said at this point about the effects of aerophagy. The commonest cause of aerophagy is anxiety, but the symptomatic consequences of an abnormal collection of air in the esophagus, stomach and upper bowel, particularly where this air pushes up against the diaphragm and disturbs the anatomic physiologic relationships within the thorax may be quite misleading and quite suggestive of such conditions as peptic ulcer, gallstones, heart disease including angina pectoris, intercostal neuralgia et cetera. Incidentally aerophagy can cause pain in the left side of the chest which may even radiate to the left shoulder.

CARDIORESPIRATORY

The complaints usually presented are chest pains, palpitations, and breathlessness alone or in combination. Where no organic basis can be discovered for these symptoms it has been popular to label the condition effort syndrome, neurocirculatory asthenia, disordered action of the heart (DAH) et cetera. Inherent in these terms is the notion of some constitutional or acquired abnormality of the cardiovascular system. Although there may be a small number of patients presenting such symptoms who have a small sized heart and great vessels in whom there is little evidence of anxiety and whose symptoms might bear a relationship to a constitutionally inadequate cardiovascular system, it is probable that the vast majority of patients with effort syndrome or neurocirculatory asthenia are neurotic expressing their neuroses through this particular body "system." The vast majority of patients with emotionally determined cardiorespiratory symptoms have normal sized hearts, vessels and capillary structure.

The pain in the left side of the chest of a cardiac neurotic patient is usually "achey" in character with occasional sharp twinges. It is invariably apical in location. I have never seen pain described as substernal and crushing, and rarely is it referred to the basal region, left shoulder or down the arm, although such radiation can occur. The shortness of breath of which the patient complains is not true dyspnea. There is usually some sensation of oppression through the chest, a feeling of inability to get a satisfying breath often associated with frequent and sighing,

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in my diagnosis unless I am able to discern some evidence of plausible psychodynamics. Most psychogenic conditions are the result of a variety of subtly interacting factors, but in most instances the principal precipitating factors and dynamic themes can be discovered if one knows what to look for. In very general terms it may be said that any persisting threat to security of self-esteem, or chronic lack of emotional satisfaction crucial to the person, may give rise to anxiety and depression, and their diverse symptomatic and attitudinal elaborations. Such threats or lack of emotional satisfaction may be inherent in a number of situational patterns. The following are some of those most frequently occurring in the military practice.

The usual and quite obvious domestic, financial, mental, and disciplinary troubles (Oddly enough, the patient frequently fails to mention important and obvious worries because he does not think they are relevant. Hence, the possibility of immediate conscious problems must always be considered.)

Separation from a milieu of home, family, and civilian life in which the patient felt secure (including the familiar nostalgia of the immature recruit.)

General thwarting of emotional satisfaction, inherent in a military setup in a person with strong "dependency needs." This type of conflict may be an important part of the emotional distress of the factor mentioned above, but very often exists independently of the mere fact of separation from civilian securities and support. This is a very common type of conflict and is often more or less subtly disguised, perhaps as an overcompensatory aggressiveness or an air of independence.

Anxiety related to the arousal of hitherto dormant but potentially powerful hostile impulses as a result of a temperamental clash with certain aspects of the military organization, perhaps the restriction and regimentation of the life and the presumed arbitrary discipline or interpersonal difficulties with specific authoritarian figures.

Homosexual conflicts, conscious or otherwise, brought about by a life of close communal association with other men, as well as anxiety related to other sexual abnormalities.

Increased pressure of work and responsibility—often following promotion—in a basically insecure person.

Traumatic events. A head injury or any abrupt, shocking experience may account for the initiation of a neurotic disturbance. The influence of old combat experiences, even though they occurred many years before, must not be overlooked in this connection.

A final word of caution While direct and even leading questions are necessary to save time one should endeavor to minimize the possibility of suggesting symptoms and answers one should be sympathetic and respectful of the patient or person and avoid a third degree approach which could inhibit frank and objective responses

SUMMARY

The identification of so-called psychosomatic conditions can be greatly expedited with benefit to the patient and physician by placing emphasis on the positive systematic approach to the diagnosis rather than on the customary negative ruling out process

This is accomplished by being alert to the possibility of psychogenicity by looking for evidence of anxiety by considering the quality of the previous personality and the family history by studying the specific features of the presenting symptomatology and finally by seeking diligently (but not overstraining) for plausible psychodynamics

REFERENCE

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EFFECTS OF DRUGS IN VOLUNTEER SUBJECTS

Generalization from data based on volunteers should be cautiously made This is only an exaggeration of a general problem in investigation For example it is well known that the effects of morphine in patients with severe pulmonary disease of different types in a patient with congestive heart failure may differ strikingly from those seen in the healthy male subject Let us well appreciate at times the fact that even with two groups of healthy males the incidence of certain drug effects may differ markedly An interesting example of the fold effect seen in the group is related to the frequency of a reaction Ohio State medical student who compared with Sigsbee's group

—LOUIS LASAGNA and JOHN M. FELSINGER
S p 360 S p 3 1954

RADIOGRAPHIC STUDIES IN VARICOCELE

JAMES W. LANE *Captain MC USAF*

THE left-sided idiopathic varicocele is a troublesome problem frequently seen by the military surgeon. Pain is the prominent symptom and sometimes is severe enough to limit the activities of otherwise healthy men. Atrophy of the testis will occur in a few of the patients with a large varicocele.

In the past opinions regarding the proper management of this problem have been conflicting. Many surgeons avoided operating on varicoceles because of the poor results and frequent complications. Newer concepts of the physiologic disturbance have been developed, however, and accordingly surgical principles and techniques have been improved. Reports in the medical literature in recent years indicate a more universal acceptance of the surgical correction of the varicocele.¹⁻⁴

This article describes the physioanatomic causes of varicoceles, shows several illustrative radiographic studies, and mentions some experiences with 26 cases.

PHYSIOLOGIC CAUSE FOR LEFT VARICOCELE

The venous outflow of blood from the testis and epididymis enters the pampiniform plexus of veins in the scrotum. This plexus is drained by a number of veins, and to facilitate this discussion of varicocele they can be divided into two groups. First, there are several veins which ascend in the spermatic cord and coalesce near the internal inguinal ring to form the internal spermatic vein. This vein courses upward behind the peritoneum to join the renal vein on the left side and the inferior vena cava on the right. The other group of veins draining the pampiniform plexus are collateral veins. These veins leave the pampiniform plexus near the neck of the scrotum and connect with veins of the thigh, pelvis, retropubic region, penis, and scrotum (fig. 1A). Anatomic dissections by El Sadr and Mina have nicely demonstrated this system of collateral veins.

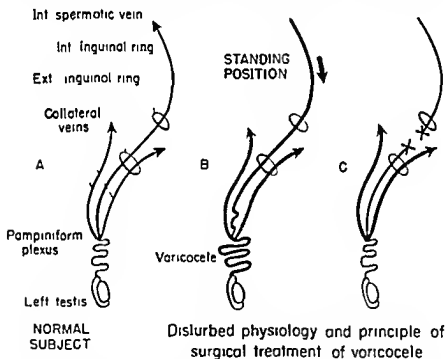
Due to factors poorly understood, the valves in the left internal spermatic vein are prone to become incompetent much more frequently than those in the right. When this occurs, blood flow

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downward in a retrograde direction in the vein when the person is in a standing position. The pampiniform plexus becomes overdistended. The collateral veins become well developed but are not able to compensate for the increased load. The result is a varicocele (fig 1B). The varicocele therefore is truly a mechanical disorder just as varicose veins of the legs.

OPERATIVE PROCEDURE

The operation which is generally advocated at present was originated by Ivanissovich and Grogori in 1918 and repopularized by Bernardi in 1941. The purpose of the operation is to interrupt the incompetent internal spermatic vein and thus halt the retrograde flow of blood into the varicocele (fig 1C). Ideally this interruption should be done at the terminal end of the vein however from a



Figur 1 (A) Schematic drawing of the veins and drainage of the pampiniform plexus in normal person. (B) The retrograde flow of blood into the varicocele with a varicocele. (C) The retrograde flow of blood into the varicocele with a varicocele. (D) Situation of flow of blood after ligation of the internal spermatic vein.

practical viewpoint it is best done in the inguinal canal near the internal inguinal ring. Interruption at this level will halt the retrograde flow of blood into the varicocele and at the same time preserve the collateral vessels. Technically the operation is not

difficult. The spermatic cord is mobilized through a short inguinal incision. The investments of the cord are incised, and inspection of the cord structures will reveal two or three prominent dilated and sometimes tortuous veins lying in the anterior portion of the cord. These veins can be isolated easily, and about a 2 inch segment of each should be removed near the internal inguinal ring. It is important not to overlook any significant veins. One other point in the technic of the operation must be mentioned. Some of the patients have an unusually low lying testicle on the left side and this should be corrected at the time of operation. This is best done by drawing up the distal ends of the ligated veins and suturing them beneath the internal oblique muscle. Thus the spermatic cord is shortened, and the testis is suspended in a better position.

RADIOGRAPHIC STUDIES

In order to study the vesicular problem more completely, radiographic studies were carried out in eight patients with large varicoceles and in one normal subject. The venograms were made by performing a venotomy on one of the pampiniform veins in the midportion of the scrotum and injecting 10 to 20 ml. of 35 percent diodrast. In four cases roentgenograms were made with the patient in both the supine and upright positions. Two complications followed these procedures. One patient developed an acute phlebitis in the varicocele. In the other, part of the contrast medium extravasated and caused a painful tissue reaction. Both of the complications subsided without ill effect.

Similar studies have been done by several previous investigators.^{1, 2, 10} I was successful in demonstrating two points which were not apparent in the previous reports, namely the visualization of the entire internal spermatic vein and the contrast in the size of the collateral veins in a normal subject with those in a patient with varicocele.

The entire left internal spermatic vein can be seen in figure 2. The large caliber of this vein and the tortuous area in its midportion indicate that it is a dilated incompetent vein. The junction of this vein with the left renal is seen opposite the second lumbar vertebra and the hilum of the kidney. It will be noted that there is not much angulation in the column of the contrast media, indicating that the internal spermatic vein meets the left renal at an acute angle. This is of interest because it is contrary to the universal concept that this is a right-angled junction.

In the venograms in six of the patients with varicocele the extensive system of collateral veins is demonstrated. In figure 3 most of the contrast media has entered the left superficial and left femoral veins through a prominent collateral channel inferior to the inguinal canal. This collateral vein is one of the external



Figure 3. All the only 1 med m has noted the c lateral ins. The left phenous and 1 mor l ns an usualized b ing me ted w th the va xoc la by the d lated i mal pud ndal

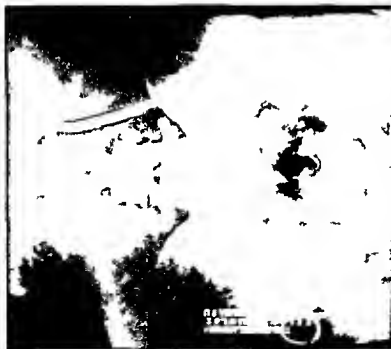


Figure 4. This on the gr md m nsinat th iwe left te mal perm sic v paise t with a la ge va xoc le The ve pp rs d t led nd i i action w th the t fs mal vel form te a gle

pudendal veins. In figure 4 there is a different pattern of collateral vessels. Much of the contrast media has entered the internal iliac as well as the external iliac vein.



Figure 4. In this patient with a varicocele the contrast medium has entered the collaterals and can be seen in the internal and external iliac veins.

The only roentgenogram obtained in a normal subject (fig. 5) shows that all the dye had entered the external iliac vein through a small collateral vessel. This suggests that the collateral vessels are important in draining the pampiniform plexus in the normal person. It is of interest to contrast the size of this small collateral vessel with the very prominent ones in patients with large vari-

cocles. This is compatible with the concept that the collateral veins in patients with varicocele undergo compensatory enlargement due to the increased load placed on them.



Fig. 5. This venogram made a normal bje. The medium entered the internal iliac vein the globe of the external pudendal veins. Contrast the size of the latter vein with the size of the corresponding vein in patient with a varicocele (Fig. 3).

CLINICAL EXPERIENCES

Twenty-six patients with painful varicoceles of moderate to large size were operated on using the technic described herein and were followed for at least 3 months. The longest follow-up was 16 months. Of the 26 patients 21 had a good result. In each of these the varicocele was corrected and the patient was relieved of pain.

It is important to analyze the five patients with unsatisfactory results. In two cases there was an incomplete interruption of the internal spermatic vein, and the varicocela persisted following operation. One of the patients no longer had any symptoms, and no further surgical procedure was advised. In the other, a second operation was done 9 months later, and additional veins were ligated. The result this time was very good. A third patient had an unusual pendulencia of the testis and scrotum on the left side, and although the varicocele was corrected this symptom persisted. A better result might have been obtained if a better suspension of the testis had been done at the time of operation. The fourth patient had atypical symptoms. The pain was located in both testicles, and even though the varicocela was corrected the pain persisted. The fifth patient was unimproved. The varicocela persisted following operation, and it was assumed that there had been an incomplete ligation of the veins in the spermatic cord. A second operation was done 5 weeks later, and two additional veins were sectioned in the midportion of the inguinal canal. The dissection was done with considerable care, and it was certain that all the tributaries to the internal spermatic vein had been interrupted. The varicocela remained unchanged, however, and one can only conclude that one of the collateral veins had become incompetent. There is no way by which one could ascertain preoperatively whether or not the collateral veins are competent. One must anticipate, therefore, an occasional failure.

To summarize the results in the 26 patients: 21 had a good result, 1 had a good result after a second operation, 3 were improved, and 1 was unimproved. There were no complications from any of the operations. Two of the patients had atrophy of the left testis preoperatively, but in no instance was atrophy of the testis caused by the operation.

DISCUSSION

The inguinal operation for varicocele is based on sound physiologic principles and is becoming accepted as the operation of choice.¹⁻⁷ However, one must still exercise conservatism in selecting patients for operation, because a few unsatisfactory results will be encountered. The varicocela should be moderate to large in size and the symptoms should fall into a typical pattern. Usually these patients will have dull, aching or dragging pain in the scrotum or low inguinal region. This pain characteristically becomes worse during and following periods of exertion and will subside on rest. It can be noted objectively that the varicocela will become larger during exertion.

Apparently the pain is due either to the weight of the varicocele with traction on the spermatic cord or to circulatory stasis and perhaps some ischemia of the scrotal structures. The impaired

circulation certainly would account for the atrophy of the testis which is sometimes present

SUMMARY

The pathophysiologic cause of varicocele is described. Radiographic studies may show the various routes by which the blood leaves a varicocele. The entire internal spermatic vein was visualized and the contrast in the size of the collateral veins between a normal subject and a patient with varicocele was illustrated.

Of 96 patients with moderate to large varicoceles followed from 3 to 16 months 91 had good results. The causes for the unsatisfactory results in five patients are analyzed and suggestions are made to avoid poor results. With careful and conservative selection of patients for operation and with close attention to the details of technic good results should be obtained in most patients undergoing operations for varicocele.

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Erratum A. th. q. f. th. th. f. A. O. b. k. f. A. re. Epididymis. A. ocia. ed. w. th. Pneum. t. wh. h. ppe. red. m. h. July 1955 is f. the. J. uro. l. th. f. ll. w. ng. ar. on. red. O. p. ge. 981. par. gr. ph. 3. lin. 7. major. h. uld. d. ra. f.

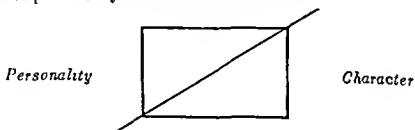
CHARACTER DISORDER

THE TWENTIETH CENTURY "NEUROSIS"

ROBERT L. CHRISTENSEN *Major MC USA*

MY concept of the nature of character disorder has been forthcoming from the 7 years I have spent in military psychiatry. I cannot claim any great degree of originality for these ideas, on the contrary, my role has been primarily one of synthesis or bringing together similar ideas expressed by a number of people at different times. In order to define character disorder as the 20th century neurosis, a frame of reference is necessary. It is implicit in the title of this article that I believe the 19th century (and I use these time designations broadly, of course) was characterized by something else. That something else was psychoneurosis, or just "neurosis" and it is partly against this relatively familiar entity that I will compare some ideas of character disorder.

First, let us try to represent a person in graphic form. If we assume a square or rectangle to represent the individual person with all his assets, liabilities and those characteristics generally considered to be emotional and mental, we can divide these features into two groups classifying them as characteristics either of personality or of character.



On one side are those traits commonly grouped under the heading of personality—happy or sad, gay and lighthearted or somber, optimistic or pessimistic, shy and retiring or bold and outgoing, tense and high strung or relaxed and placid, meticulous or casual, cautious or daring. On the other side are those factors we call character traits—such qualities as honesty, integrity, dependability, consistency, social responsibility et cetera, and their opposites.

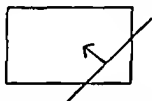
From 121st Evacuation Hospital, Post Office Box 971, San Jose, California, Dr. Christensen
121st Evacuation Hospital, Post Office Box 971, San Jose, California

It becomes obvious of course that at times a particular quality may be on one side then on the other of our rectangle or one observer may think that a certain trait is one of personality while another may classify it as a character trait.

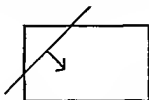
Such difference of opinion must exist we cannot make nature's planned complex system fit a diagram or our preconceived notions. Further we are faced with the arbitrariness of establishing any such dichotomy.

With full realization that this diagram is inadequate let us see what use we can make of it. Two types of adjustment problems can be represented. First is the neurosis or psychoneurosis wherein the majority of difficulties lie in the area of personality (personality traits here when exaggerated can be regarded as symptoms of neurosis and we are assuming our individual has adjustment difficulties).

Psychoneurosis



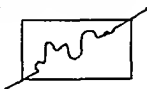
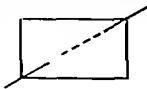
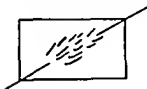
Second is the character disorder wherein the adjustment problems lie primarily in the area of character structure.



Character disorder

It is important to note that at no time does the line lie outside the rectangle. In other words there are no pure neuroses or pure character disorders—adjustment problems are always a combination of neurotic and character difficulties.

If a trait or maladjustment cannot be classified either as neurotic or one of character deficiency (depending on the observer and the circumstances) the division line will be blurred or broken or be represented as an irregular curved line.



Examples of these types of adjustment problems can be given. First, imagine a person with both the symptoms of neurosis and the acting out of character disorder. It may be impossible to say which came first, and it may be useless knowledge to know which came first. It may be difficult to decide which of the two manifestations of the adjustment problem is predominant. Yet in keeping with the usual practice of medicine, we try to explain the entire clinical picture with one diagnosis. Sometimes a compromise is reached, a diagnosis of neurosis is made, and the predisposition is the concomitant presence of a character disorder. Example: Obsessive compulsive reaction, predisposition, passive aggressive reaction.

Or the reverse may be preferred, and we diagnose character disorder and list "superimposed neurotic symptomatology" as a manifestation. Example: Emotional instability reaction with superimposed neurotic (conversion) symptomatology.

The blurred or broken line actually represents our ignorance or lack of understanding, both of a patient and of the normal as well as abnormal emotional processes involved. Yet we must do the best we can with our limited diagnostic tools and circumscribed understanding of normal and abnormal psychology. No one else can make the diagnosis for us.

Now for the other example—the curved line. It is possible that an originally neurotic symptom can become infused into the personality structure in such a fashion as to assume the characteristics of a character quirk.

Now let us explore the proposition offered at the beginning that character disorders were relatively unknown in the 19th century and are ubiquitous in the 20th.

Modern psychiatry began as descriptive psychiatry, and a nomenclature was developed to classify symptom complexes. Subjective symptoms were, of course, the criteria, because no objective tests (resembling physical examination) could be performed to provide a more scientific basis, and because there was nothing else on which to base a classification system.

Symptoms of neurosis are ego-alien, whether they are of organic or psychogenic origin, and are the prime reason that a patient seeks out a physician. Thus in earlier days only patients with subjective symptoms consulted the psychiatrists. It is no wonder that the system which came into existence included essentially only neurosis and psychosis. Acting-out behavior, on the other hand, carries with it but little of the tension and anxiety accompanying most emotional symptoms.

Psychoanalysis, too, in its infancy followed this pattern. Treatment of the psychoses presented a dismal outlook, indeed,

consisting mainly of custodial care. Thus psychoanalysts concentrated on patients presenting subjective symptoms: *e* those with psychoneuroses.

Some phases of acting out were recognized—they had to be. One could not ignore them. But in the time honored tradition of medicine they were classed as hereditary or constitutional. Probably this is an understandable reaction because many times physicians can do but little nature doing most of the healing. When a physician is stumped he experiences feelings of inadequacy and impotence. These can be relieved by consigning to the patient these puzzling diseases which he cannot help or understand—the patient, then, is responsible for not having the raw materials with which the physician can work. It is in this way that the epithet constitutional psychopathic inferior came into being.

As psychiatric and psychologic knowledge grew the idea developed that all behavior was motivated and directed by emotional forces and that there could exist symptoms or symptom equivalents of a more ego-syntonic nature *e* *g* acting-out tendencies.

Although the word constitutional was reluctantly dropped from the various terms indicating psychopathy (because our best patho-psychologic techniques were uncovering no constitutional or hereditary abnormalities) diagnostic nomenclature prior to World War II listed neurosis (psychoneurosis) psychosis and a polyglot group under one heading—psychopathic personality. The diverse characteristics which could be lumped under this last diagnosis were astounding. The many connotations of this term are close accord to the diversity of the clinical pictures. This too may have been an expression of resentment toward persons who, having a troublesome and relatively incurable disease, constituted an assault on the psychiatrist's prestige.

During World War II came the opportunity for clarification. Theomenclature of the Army not as rigid and inflexible as the American Psychiatric Association and American Medical Association classifications introduced the term character and behavior disorders. Certainly this diagnosis seemed to fit better the majority of men being seen by military psychiatrists. (It appears to be generally accepted now that true psychoneurotics present relatively little problem and function fairly well though often at great personal cost.)

In the military at least, patients with classical psychoneuroses are rare and it is my impression that this is true also in civilian practice. Assuming this impression to be accurate there are several possible explanations. Perhaps the lessening of

social restrictions on the expression of sexual and biologic drives is a factor reducing the number of psychoneuroses. Perhaps our ability to diagnose and formulate more skillfully has led to our viewing personality structure in a different and, we hope, more complete way nevertheless I believe that the change in attitude to sex does play a part.

Also, I believe that the primary problem of this century is that of handling aggressive feelings. With more "civilization" has come greater restriction of direct personal and individual expression of aggressive hostility, and also more extensive and destructive warfare. Even here, however, the personal element is lessened and we often kill our enemies from a distance some times unable to see them, by use of some sort of machine or device with far-reaching effects.

If, then, hostile aggression cannot be expressed directly, it will come out in other ways. Just as psychoneuroses and sexual problems were characteristic of the 19th century, so character disorders and problems of handling aggression seem to be characteristic of the 20th century.

Most assuredly, an area wherein neurotic difficulties may be likely to occur, the sexual area, makes an ideal point of break through of anger. Do we then diagnose the boat in the dike or the force and volume of water behind it as the important aspect? Obviously we should somehow include both, but, of the two, what is behind the dike demands first consideration.

More evidence supporting the thesis that acting out syndromes are typical of our times can be found in the frequency with which "primary behavior disorder" is diagnosed at child guidance centers. Acting out is a prime objective symptom, and it would be far fetched to think this behavior pattern changes when the child grows up.

Indicative of the changing viewpoint is the expansion of the section on character disorders in the newest A P A classification, now definitely larger and more inclusive than the present Army nomenclature that represented the first step in this direction.

Here is the classification of psychoneuroses¹ used by the A P A until changes were instituted in 1952.

- Hysteria (anxiety hysteria conversion hysteria and subgroups)
- Neurasthenia
- Psychoasthenia
- Hypochondriasis
- Reactive depression (simple situational reaction others)
- Anxiety state
- Mixed psychoneurosis

And here is the closest approach to character disorders

Psychopathic personality

with pathological sexuality

with pathological emotionality

with asocial or amoral trends

mixed types

It is significant that, in either the third or fourth editions of Noyes textbook there is no discussion of primary behavior disorders (1934 classification) or of transient situational personality disorders (1952 classification). Consideration of these minor groups will be omitted.

Following is the classification of the psychoneuroses propounded by the A P A in 1950

Psychoneurotic reactions

Anxiety reaction

Dissociative reaction

Conversion reaction

Phobic reaction

Obsessive-compulsive reaction

Depressive reaction

Psychoneurotic reaction other

[And here is the equivalent of character disorder]

Personality pattern disturbance

Inadequate personality

Schizoid personality

Cyclothymic personality

Paranoid personality

Personality trait disturbance

Emotionally unstable personality

Passive-aggressive personality

Compulsive personality

Personality trait disturbance other

Sociopathic personality disturbance

Antisocial reaction

Dyssocial reaction

Sexual deviation

Addiction

Alcoholism

Drug addiction

Special symptom reactions

Learning disturbance

Speech disturbance

Enuresis

Somnambulism

Other

Recognition that neurosis can change to character disorder is implied in the classification of "obsessive compulsive reaction" as a diagnosis of neurosis and of "compulsive personality" as a diagnosis of character disorder. Informally, among psychiatrists, character disorder has been carried further to include a "hysterical character structure," and there has even been mentioned a "schizophrenic character."

It may be that symptoms, starting as relatively ego alien, with some chronic stress gradually become so much a part of personality structure in the broad sense as to cease being ego-alien and to become ego-syntonic. Accepted as part of the self, they are then part of a way of life. This then is much more a character adjustment pattern than a psychoneurosis. A common case, I think is that of the individual who develops a reaction pattern from infancy, and, for example grows up excessively meticulous and compulsive. This adjustment is not ego alien and therefore not a neurosis.

I have pointed out some of the differences between character disorder and psychoneurosis—symptoms vs. acting out, ego-alien vs. ego-syntonic pattern. There are, however, similarities as well. Symptoms and acting out are but different sides of a coin. The neurotic develops subjective symptoms because he does not act out. The victim of character disorder does not develop symptoms (and anxiety) because he does act out his feelings. Self punishment is implicit in both these responses; the motivating source for both is the unconscious. Treatment for either is similar, because the conflicts may be very similar. In treating the neurotic, one helps the patient to work through (take action about) his problems. In treating the patient with a character disorder, one hopes to generate anxiety (symptoms) over his behavior, and over its meaning and unfavorable influence.

Basically, then, there are many similarities. It would appear that a neurotic symptom can, in a sense develop more persistent and ego-syntonic elements, undergoing a sort of metamorphosis into what may be better described as a character disorder (sometimes referred to by a compromise term, character neurosis). From an economic standpoint, the factor of fixation of neurotic symptoms by monetary compensation is well known to most psychiatrists, this is, however, a separate subject and cannot be discussed here.

SUMMARY

I have tried to define the adjustment problem generally called character disorder, partly by contrasting it against the better understood neurotic pattern and have suggested some factors which I believe account for the predominance of this condition in

mitis e *P. coliforme* that was pathogenic for mice and caused eye lesions in rabbits. The serum of the patient showed agglutinins to a significant level. One had to surmise therefore that this group of enterobacteriaceae may be pathogenic for man also.

As far as can be ascertained from available literature the first classification of *P. coliforme* with the aid of single-factor antigen studies was carried out by Eveland and associates. The present report is a continuation and expansion of that preliminary publication. It is based on the results of the examination of 667 cultures, 64% of which were isolated during a period of about 16 months (1953 to 1954). One hundred and forty eight of them did not agglutinate with any of the 14 sera used during the previous study. They will be referred to as further groups and symbolized as F. The 519 remaining strains came from the following sources:

Four strains from Japanese soil samples collected to determine if chemical or mammalian fertilizer had been used and 16 organisms isolated from vegetable samples collected from messes and clubs of the armed services in a study by Col. B. F. Leach and Lt. Col. R. O. Anslow of fecal contamination of indigenous foods in Central Japan.

Eighteen strains from patients with diarrhea in Japanese hospitals received through the courtesy of the Metropolitan Henshu Hospital and the Kitasato Institute in Tokyo.

One hundred and forty one cultures isolated from patients with diarrhea in United Nations military hospitals and dispensaries in Japan.

One group of 23 strains from an outbreak of diarrhea at a Marine camp in Japan which was microbiologically investigated by the Fleet Epidemic Disease Control Unit (FEDCU) No. 2.

Thirty one organisms from Korea received mainly through the 1st Medical Field Laboratory and six strains from the Ryukyu Islands submitted by the Ryukyus Army Hospital.

Forty three strains isolated from patients with a diarrheic condition colloquially called Hong Kong Dog which afflicts crews of naval vessels in Hong Kong harbor. The cultures were collected during three trips to and from Hong Kong on AP4 type ships by teams made up of personnel of the FEDCU No. 2 and of the Department of Bacteriology of this laboratory. One hundred and fifty two additional stools for culture were collected from crew members without diarrhea during these trips.

Five organisms isolated from stools collected by First Lt. J. Arrington from airmen who returned to Tokyo ill with the so-called New Delhi Belly. This was a diarrhea occurring in crews and passengers of airplanes on the Japan Near East run.

Fifteen strains isolated by the FEDCU No 2 from Indochinese refugees in Camp de la Pagode near Hiep Phong, and 40 cultures collected from ill French soldiers evacuated from Indochina via Japan

A group of organisms of miscellaneous provenience cultures from the Philippine Islands, cultures from New Britain (collected by Lt Col H Baker) stock cultures received from Dr C A Stuart and strains from California of a former study

About 85 percent of the strains from patients with diarrhea were isolated from stools in which no salmonella shigella, Arizona, Bellerup, Bethesda, or Providence bacteria were isolated

The first attempts to classify *P. coliforme* were made with the aid of biochemical reactions. All strains fermented dextrose and mannitol rapidly, with the formation of acid gas. They did not produce acetylethylmethylcarbinol, decompose gelatin, nor use citrate as the sole source of carbon. They were methyl red positive and did not form hydrogen sulfide. Exceptional strains failed to produce indole. The cultures fermented lactose slowly and did or did not attack the following carbohydrates: sucrose, salicin, edonitol, and dulcitol. The fermentation pattern of these last five carbohydrates depended so much on the individual strain that attempts to classify *P. coliforme* according to their action on these substances had to be abandoned. It was decided therefore to use agglutination tests as the main criterion of type differentiation. Because of the known complexity of the antigenic structure of enterobacteriaceae, only "O" antigens were used for the primary classification.

Strains that did not react with salmonella, shigella and *Escherichia coli* 1 to 25, 026, 055 and 111 were selected for the production of diagnostic sera. The cultures were grown on tryptone agar for 24 hours at 37° C, washed off with saline solution and heated for 2 hours in the boiling water bath. Increasing amounts of this antigen were injected intravenously into rabbits, and the animals exsanguinated when a titer of at least 1:600 was found on test bleeding. The sera were preserved with 1:10,000 merthiolate and kept under refrigeration.

Both tube and slide tests were used according to the standard method recommended by Edwards and Bruner.⁸ As reported in the preliminary communication,⁷ 14 "O" antigens were established which to date have appeared in 123 combinations (table 1).

This enormous variation of the antigenic mosaic may be caused by loss variations. There were isolated for instance from the same stools of the same patients simultaneously the following *P. coliforme* cultures

1 —	1,2 3 4 5	1,2 3 4	2	3,4
2 —	2 3,11	3 11	11	

TABLE 1. Distribution of Personnel by Component and Activity

Organizational Structure	JCS				DIA (USAF)				Ind China		O b	Tot l
	S ill	V s tabl	Dia h i l p e	Dia h e s i U N P a e l	Mh Camp b k d i a h	C r w	I l n g K a D s	Ry ky I t n d	K o r	N w D i l l y	I n d o o h i p e t s	F i d l
1				4		1		1				
12				6		11	2		7		2 () 1 (b)	8
123				2					1		4 (b) 1 ()	32
1234				2		2					1 ()	6
12345						2	2					5
1237						7					1 ()	12
124				1		1						1
1246						1						1
1247												1
12410						1			1			1
12578				1								1
12589				1								1
126				2								2
1267				1								1
12678				1								1
127				1								1
1278				4		2						2
1278913				1		2						3
127813						2						3
127814						2						6
1279						1					1 (b)	1
12714				1		1						1

TABLE 1. Distribution of *Paracololetum coliforme* strains isolated in the Far East.—Continued

[illegible]

TABLE I Distribution of Parameters

[illegible]

TABLE 1 Distribution of Personnel by Medical Specialty

O t g u r	J p a				N i l	D i a h (E h a J p)	D i a h R y k y l h a d	N w D i h B l l y	I d h m		O b	T l
	S l	V g t a b l	D i a h J p	D i a h (N p e a c l	M a c a p b k d i a h	C w k s D g	H k s D g	R y k y l h a d	I d h m	F a c h l d		
111	1			3		2	2				1 (b)	1
112			1	7		9	2			6		2
113						2	2					28
2						1	1					3
234												1
2345												2
23456												1
23459												1
23411	1			1								1
23711				1								1
2311				3								1
2314				2			2					18
247												2
256791113	1			2								2
2510				1								2
2511				2								1
26												1
267												1
27												1
261214				1								1
27												1
278				1								1

TABLE 1 Distribution of *Paracoloclostridium coliforme* in the Far East—Continued

Organism structure	Japan					Naval vessels			Dutch (other than Japan)			Indochina		Other	Total
	S.I.	Veg. tablets	Diarrhea in Japanese	Diarrhea in U.S. personnel	Marine camp outbreak	Crew	Hong Kong	Ryukyu Island	Korea	New Delhi	Belly	Indochinese refugees	French soldiers		
812				1											1
9				3		1						1			3
911				1											3
913				1											1
10				2										1 (d)	4
1012															1
11				2	1			1				4	8	1 (d)	19
1112				1		2	4						2		7
12				4		8	2		3				1		19
13						3	1								5
14				2		1	1								4
Further group	5	6	1	39	3	46	13	2	9	3		9	8	1 (a) 2 (b) 1 (c)	148
Total	9	22	19	180	26	198	56	8	40	8		24	48	29	667

*With 16 excursions noted under (a) and (b)

(a) Isolated in California (b) Type strain from D. Stuart () From the Philippines Island (d) From New Britain () From fomites

6

15

1 2 3 4 5

12

Strains with the antigenic structure 3 4 5 are serologically identical with the strain 311 of Stuart. They were found in Korea and Japan in diarrheas originating in Hong Kong and aboard U S naval vessels but not on the southern Asiatic mainland. The closely related group 3 4 differed from 3 4 5 by being isolated also from Indochinese refugees and from a French soldier. Group 3 4 may however be a loss variant of group 3 4 5. One further serologic combination 1 2 3 4 5 is of great interest in this connection. Members of this group were isolated from patients with diarrhea in Japan and in Hong Kong. Strains studied at the Kitasato Institute in Tokyo (not included in the tabulation) showed that this serotype was frequent in Japanese children afflicted with diarrhea.

Group 1⁰ was found in Japan, Okinawa, Korea, and in French soldiers. Serologically it is related to Stuart's types 111, 411, 26711, and 31611. It may be the parent of group 2, or an intermediate in the variation of 1⁰⁺ strains. Group 2 has been found in diarrheas in Japan, Hong Kong, Indonesia, and in one case of New Delhi Belly. One has to consider it as a possible loss variant. The same holds true in regard to groups 11 and 12, which were rather frequent and were isolated from different geographic locations.

Group 2 3 11 was isolated chiefly from an outbreak of diarrhea in a military camp in Japan. Thirteen strains of *P. coliforme* with this antigenic structure were isolated from that outbreak, together with four of 3 11 structure and one with 11 antigen alone. One additional strain was typed as 3 4 6 11, and two as 4 6. Finally one *P. coliforme* was classified as 7 and one as 8. The study of this outbreak clearly demonstrated the antigenic variations occurring in *P. coliforme*.

Group 3 6, with one exception, was isolated only in Japan and Korea, while group 6 appeared well distributed in Japan, Korea, Indochina, and New Delhi. Group 6 may be however the last link in a chain originating from 6 7⁺, 6 11⁺, or any other group containing the 6 factor.

It is difficult to discover the source of infection in many a diarrheic outbreak. This task is even more difficult in paracolobaculum infections because of their antigenic variations. Some insight into the circulation of these organisms resulted from a suggestion made by Col. R. L. Mason, who was commanding officer of this laboratory that the teams investigating Hong Kong Dog aboard naval vessels collect samples from fomites which had been touched by crew members or by troops carried on the ships. *P. coliforme* with the antigenic structures 1 2, 1 2 3 4 5, 1 4, 3 4 5

and 4,10 were isolated. These are related to strains found in man. Because the swabbing of fomites with subsequent culture for enterobacteriaceae proved to be a reliable method of determining the presence or absence of fecal contamination of fomites aboard ships (considering the finding of possible enteric pathogens and/or of *Esch. coli* as indicators of such contamination) this method was used in subsequent studies of diarrheal diseases.

The investigation of *P. coliforme* organisms isolated from vegetables has not as yet yielded as much sufficient information as is needed. The relatively frequent occurrence of organisms with factors 6, 7, and 11 seems to be significant if subsequent examination confirms this trend in the distribution of serogroups of *P. coliforme* on vegetables. Further study of fomites and foods is indicated, for the clarification of the role of these carriers of *P. coliforme*.

With regard to the disease caused by these organisms, paracolobactra follow the general trend of enterobacteriaceae by causing more severe symptoms in the very young, the very old, and in persons ill with other diseases. The case of *P. coliforme* septicemia mentioned earlier in this report points to the greater pathogenicity and invasiveness of *P. coliforme* in infants. According to Japanese investigators ⁴ *P. coliforme* strains are causing serious difficulties among Japanese infants and young children. In the armed services where young and healthy persons predominate, paracolon diarrhea is usually of short duration. It frequently evades attention because of its short relatively mild course and usually prompt response to antibiotics. The number of organisms ingested no doubt affects the severity of the diarrheal attack in each case. Disruption of unit function is seldom caused by paracolobactra in the Army. The situation is different however in the Navy and Air Force, where even short-time incapacitation of a man performing a highly specialized technical task, such as piloting an airplane, may be of serious concern. While the physically strong adults of the armed services are less liable to suffer from paracolobactrum diarrhea, consumption in distant "ports of call" of unusual dishes and drinks including uninspected food, increases the probability of intestinal infections.

So far as is known, all recognized group outbreaks in the military forces have had the characteristics of food borne infections. Therefore the chief measures which may help to lower the incidence of paracolobactrum disease are the same as apply to other food borne infections: i.e., good sanitary practice in food service, and the avoidance of unapproved foods and eating places.

SUMMARY

Six hundred and sixty seven *P. coliforme* organisms were studied. Their antigenic structure showed great variations, presumably

because of the frequent loss of antigenic factors. There seems to be some difference in frequency of occurrence of various antigenic factors according to geographic origin of the examined materials. The fact that *P. coliforme* was isolated in large numbers from many patients in whom no other pathogenic or potentially pathogenic strains were found confirms the statements of previous authors that these bacteria should be included with other paracolobactra which may cause diarrhea and other disease in man.

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RESEARCH TODAY

Gone are the days of the lone researcher pouring over reports in the barn or the attic. Modern research is a matter of teamwork in streamlined laboratories with chromo-plated gadgets. A single piece of modern research equipment may cost as much as a busy practitioner's annual gross income. Perhaps some new Curie, Pasteur or Koch may flash across the scientific firmament in the future. The lone worker with shabby equipment but the odds are against it. The single dedicated worker in his basement laboratory has probably gone the way of the one horse hay the little black bag and the elegant four engined pre-crypton.

—EDITORIAL

in *J ournal of Med i S ci ty f*
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FUNCTIONAL ASPECTS OF NASAL PROSTHETICS

HAL B JENNINGS Jr *Lieutenant Colonel MC USA*

JOHN H TENERY *Lieutenant Colonel MC USA*

AELREO C FONDER *Captain DC AUS*

THE successful use of a simple device which improved the comfort and respiratory physiology in one of our patients prompts this presentation. It is offered with the hope that its modification and use in other applicable cases may be of benefit to patients.

Slight modification of a commercial crystal type cigarette filter was used as an adjunct to an acrylic nose prosthesis to effect the improved physiology and comfort of the patient during his period of pedicle tissue preparation for permanent nose reconstruction. Due to the gaping defect in the anterior nasal passage (fig 1) caused by the traumatic loss of the nose the entire physiology of the nasal airway was deranged. The absence of nasal vibrissae prevented effective filtration of dust and foreign material from the inspired air. The loss of the nares disrupted normal circulation of air through the nasal cavity caused loss of the warming and humidifying effects of turbulent air flow, and in turn caused the patient much discomfort due to irritation and drying of nasal and pharyngeal mucosae.

To improve cosmesis during the pedicle-tissue preparatory phase of the reconstruction, an acrylic nose prosthesis was constructed (fig 2). This alone relieved some of the symptoms referable to mucosal dehydration. At the patient's suggestion however, an unmodified plastic cigarette filter* (fig 3A) was cemented internally into each nostril opening of the nasal prosthesis. Because the impedance to air flow caused too much respiratory effort for adequate air volume the filter was cut in half, the amount of filtering crystals reduced and the plastic ends of the filters were replaced by nonrusting metal screens (fig 3B). These simple modifications (fig 3C) facilitated air flow and effected the stoppage of symptomatic discomfort formerly experienced by the patient. The crystals in the filter were effective in removing dust and airborne irritants. The angle of the filter tubes produced enough normal physiologic circulation of air (fig 4, A and B).

* In Brook Army Hospital Fort Sam Houston TX
Described crystal filter by Duquell

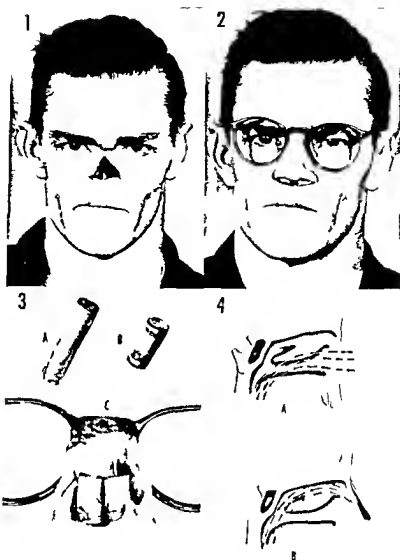


Figure 1 The patient after preoperative surgery to open the nasal passage. Figure 2 Patient with acrylic nose prosthesis as a temporary means of added support of the nasal passage. Figure 3 (A) Unmodified filter (B) Modified filter—short modified lower crystal and metal crystals. (C) Resection of the filter with modified filter plate. Figure 4 (A) Diagrammatic representation of the nasal passage with the filter in place (B) Diagrammatic representation of the nasal passage with the filter in place

through the nasal passages allowing greater warming and humidifying of the inspired air

With a little imagination these filters could be adapted for use in other patients requiring the directional and filtering effects

REFUGEE PROBLEMS IN

THO IAS A DOOLEY III Lieutenant (jg)

IN JULY OF 1954 after the Geneva French and Vietnamese officials were in the ancient capital of Tonkin, Indo China. Vietnamese governments requested that forces in evacuating from Tonkin all to live in freedom south of Geneva's 17th parallel of movement was to be permitted according to the Geneva Accords.

America turned and in the second war. The U.S.S. Montague, and Force 90 sailed into Baic d Along port city of Haiphong. By 1 September Force 90 participated in the evacuation.

Under the direction of Commander Force Medical Officer Task Force 90 Commander Julius Amberson (MC) and Epidemiological Unit was organized to establish liaison with the French authorities and to prevent the spread of American vessels involved in this "Passage".

According to the fourteenth clause of the Geneva Accords, anyone who lived in Communist Vietnam north of the 17th parallel who desired to move south would be allowed to do so.

All the area north of the 17th parallel in Vietnam gave a perimeter around Haiphong 20 miles in length and 15 miles in width. Successive dates until at the time of Haiphong and its immediate control.

In the months of August and September, refugees flowed daily to the huge

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Then as the Vietminh controls became tighter the numbers became smaller and smaller

The French Navy with the co-operation of the U S Navy did some heroic off the beach rescues and in one week for example brought over 18 000 people from the area of Bui Chu just south of Haiphong behind the Bamboo Curtain to their freedom here in Haiphong The refugees then became escapees In November 1954 the numbers again swelled Over a half a million refugees passed through our camps and 189 316 were transported south on American ships There were 109 births and 53 deaths on the United States ships These refugees were desolate and miserable depicting an eloquent picture of despair yet their faith and spirit and belief in righteousness was outstanding Task Force 90 did a noble transportation job

In the last week of August 1954 the first refugee camp was completed This was called Camp de la Pagoda and was built by the United States Foreign Operations Mission in co-operation with the Military Assistance and Advisory Group with the medical planning and administration done by this unit in liaison with Haiphong Public Health Services The French Army furnished the manpower

EPIDEMICS IN PAST YEARS

As a guide to what could be expected in the way of epidemic diseases Vietnamese public health statistics and French military statistics were also thoroughly reviewed From these statistics it appeared that the diseases most to be feared in epidemic proportions were cholera dysentery typhoid and plague but during the operation none of these were seen in any significant numbers However cases of malaria tuberculosis, trachoma beriberi and other common tropical diseases were seen by the hundreds

EPIDEMIOLOGICAL CONTROL

For six weeks the Fleet Epidemiological Disease Control Unit No 9 (FEDCU) from Japan was incorporated in the Preventive Medicine and Epidemiological Unit This unit collected specimens took innumerable photographs classified rodents and other animal life made peripheral blood smears and did an *exhaustive study of the city water works and general sanitation of the area*

INOCULATIONS

Under this unit's supervision Vietnamese Public Health nurses vaccinated against cholera and smallpox almost all of the refugees in the camps before they were put aboard American vessels The vaccines were obtained through the U S Foreign Operations Mission.

Twenty four large boxes of supplies, made up by U S Foreign Operations Mission and given to Public Health, were distributed to the Control Teams, consisting of Vietnamese doctors, nurses, and midwives, who traveled on the United States ships carrying the refugees south. The Control Team would then fly back north and repeat the trip on another ship. These boxes contained sulfadiazine, aspirin, APCs, chloroquine, a small amount of DDT, minor surgery equipment and solutions, boric acid, swabs, cotton dressings, hexylresorcinol, Brown mixture tablets, and sodium bicarbonate. They were resupplied by American Aid in Haiphong.

CAMP DE LA PAGODE

Camp de la Pagode was the first camp to be constructed. It started as a 100 tent camp in the second week of August 1954 and grew to a total of 149 Army style, 20-man tents. Its daily census ranged from 2 000 to 12 000, but the mean was about 7 000.

The tents were arranged in rows of 12. There was a broad roadway through the camp which was situated 1 mile from the highway, 5 miles from the city of Haiphong. The camp was surrounded by rice paddies. Electricity was rigged in November. There was an elaborate set of drainage ditches running on all sides of each tent, joining and flowing on each side of the roads. These functioned well and kept the tent camp from flooding during the monsoon season in August and September.

The broad fields and paddies surrounding the camp were used as the latrines. About once a month we would spray these fields with a 1 percent solution of lindane (1, 2, 3, 4, 5, 6 hexachlorocyclohexane), 15 gallons to the acre.

The camp site itself was sprayed once weekly with lindane. This took care of the fly problem adequately even during the hot damp months.

There was a medical sick call tent and two hospital tents which were full most of the time. Only patients with serious diseases were treated in the hospital tents. In the beginning of the operation the Vietnamese Public Health furnished a doctor at these sick calls every other day, and in the interval the very capable Vietnamese nurses would run the sick call. By 1 December, however, almost all of the Public Health doctors had moved south and the Preventive Medicine and Epidemiology Team doctor held sick call every other day.

As the main mission of the unit was to prevent the spread of epidemic diseases, only those illnesses of an acute or epidemiologically dangerous nature were treated by the unit physician. There were as many as 200 people at 1 day's sick call. Common

decency however demanded that one be generous with the oral penicillin as well as the soap which proved excellent in the cleaning up of the severe staphylococcus infections of the scalp that are so prevalent in Tonkin

The respiratory diseases which were high in percentages were handled with terramycin (brand of oxytetracycline) and the Brown mixture tablets Dysentery was assumed to be amebic and usually in the chronic stages In acute stages it was treated with aureomycin Vitamin deficiency diseases were common beriberi being by far the most prevalent Multivitamins were given and although the refugees only stayed in the camps for a week or so before being evacuated a definite improvement could often be seen Perhaps we do not realize the efficacy of our mundane prescription "Multivitamins tablets one daily"

Epidemic diseases of cholera typhoid and plague and yellow fever were not seen Fulminating diarrheas were seen in three children who were living in the yard of a small mission in Hien An (about 10 miles from the city) while awaiting other members of their families to escape from behind the Bamboo Curtain The unit doctor was called by the parish priest As the French laboratory units had gone to Saigon and the City Hospital of Haiphong had few facilities an exact diagnosis could not be made Based on the rapidity and extent of the dehydration the muscle cramps and the general severity of the disease process it was assumed to be cholera The treatment consisted of fluids given subcutaneously morphine and sulfaguanadine One child died and the other two made uneventful recoveries The particular hut on the mission grounds in which they were living was burned and the surrounding area given a thorough spraying with two percent lindane The adjoining latrines were filled with lime and later sprayed with lindane No further cases of diarrhea were noted This was the closest thing to an epidemic disease seen thus far in the Indo China evacuation

Helminthic infestations were present in over 90 percent of the refugees A cursory glance into a latrine area would reveal a pathologic museum of intestinal worm specimens

Fungus diseases especially due to tinea involving both scalp and glabrous skin and usually complicated with a secondary infection were frequently seen Clinically typical cases of favus were commonly seen in the children

Laws especially of the face and the legs was seen occasionally A few injections of penicillin plus local measures brought about excellent results

The Fleet Epidemiological Disease Control Unit laboratory found mosquitoes of the genus Aedes and public health statis

tics indicated that there had been proven cases of dengue in past years, but it was my good fortune never to have seen any. No rickettsial infections were seen, but body lice were common, and the dusting of all refugees with DDT was directed.

The *Culex* mosquitoes were found, though only a few cases of filariasis were seen. Filariasis is more common in the mountain areas than in the Tonkin delta from which most of our refugees emigrated.

Malaria due to *Plasmodium vivax* was a common cause of death among the children in the camps and on the ships. Many had a fulminating fever and marked splenomegaly but no other symptoms. The vector was forever present in Tonkin and especially bad in the rainy seasons. Laboratory examinations by FEDCU of peripheral blood smears proved *P. vivax* more common than *Plasmodium falciparum* or *Plasmodium malariae* in cases studied in the Haiphong area.

WATER PURIFICATION

At Camp de la Pagodo, water was taken from the nearby rice paddy and purified for consumption by the refugees. During the months of October and November as much as 12,000 gallons a day were purified. The optimum was 1 gallon per refugee per day.

We used the gasoline engine driven portable 15 GPM Wallace and Tiernan Water Purification Unit, 1940 model, available in the Marine Corps Supply Catalogue. Except for very minor repairs they worked daily for the 137 days and will probably continue their fine record. If machines could be awarded letters of commendation these two should have them.

The principle was to lift water from an available source, run it through a sand filter, through two chemical feed tanks, one with alum, the other with soda ash and finally through a hypochlorinator which feeds chlorine solution to a residual count of one part per million. The water was put into a 3,000 gallon, rubber storage tank where it was allowed to settle and then pumped into a second tank where the water was clear and potable. A hose and a spigot completed the machinery.

Some of the difficulties encountered were the following: the particular paddy from which the water was lifted had to be fenced off with barbed wire because the refugees would wash their feet, food, and livestock in it. One morning the whole rice paddy was black, and there was no other discoloration in any of the adjacent paddies. After much concern and investigation it was discovered that the cause was a vegetable dye that a peasant had used to color her clothes black for the winter. She dumped the concentrated solutions into the rice paddy when she had finished with them.

On several occasions our rubber tanks were slashed with a knife, believed to be an attempt by Communist sympathizers to foil our work. The Vietnamese were able to sew these and vulcanize them with some sort of asphalt. We finally erected a barbed wire fence around the water tanks and posted a 24 hour Senegalese French guard. No further difficulties were encountered.

CAMP SHELL

In August Camp Shell, a small camp for the overflow of refugees from Camp de la Pagode, was built near the site of the latter. It had a capacity of 2 000. Construction and sanitation were identical. A 3 000 gallon rubber storage tank was erected and 2 000 gallons of potable water was delivered daily from the City Service of Haiphong via a leaky water trailer.

CAMP CEMENT

In the first weeks of December it became obvious that another camp would have to be constructed. A new camp was built and christened Camp Cement because of its location near a large cement plant. On the day of its completion 3 500 refugees moved in.

There were 64 tents of the same type as in the other two camps. The daily census was around 4 500. This camp was in better condition than de la Pagode because the ground was higher and drier.

Three latrines 20 feet long, 5 feet deep and 3 feet wide were constructed and edged with pierced steel plating and a 5 foot apron of crushed stone. A 5 foot high canvas windbreak was built around each latrine and painted with 9 percent chlordane (1 gallon to 400 square feet). Seat space was no problem as the natives squat rather than sit.

The latrines were on the downwind side of the camp, 200 yards from the nearest rice paddy and 500 yards from the water tanks. Because there were always a few inches of water on the bottom of the latrines, crude oil was oiled on twice weekly. Once a week lime was poured in to destroy the feces and the whole area was sprayed with a 9 percent solution of lindane (1 gallon per 300 square feet). This helped to control the ever present flea fly and mosquito problem. Once a week the three camps were given a general spraying with a 1 percent solution of lindane, 1 1/2 gallons to the acre.

The tents were floored with steel plating on which the natives put their straw mats. The tents were dusted with 5 percent DDT powder from time to time. In certain dirty parts of the camp such as the garbage disposal areas, 5 percent DDT in kerosene was

used weekly Aerosol bombs were used in the medical tents when needed. As in the other camps, Camp Cement had two medical tents, one for hospitalization and one for sick call.

Areas were marked for waste disposal, signs were put up around the camp to point them out, and three or four times a day the people were reminded by loud speakers to use them. Nevertheless, only about 50 percent bothered to use these areas. Because the problem was extremely severe in the hot summer months, a solution was attempted, but in oriental lands such solutions are seldom achieved. The tradition is just to throw the garbage behind the tents. The fact that this happens to be the front of someone else's tent seems unimportant to the inhabitants of both tents concerned.

Rodents were present but they did not create a problem. Means were not available for a thorough deratization. As each ship was relieved, it had a thorough deratization at its home port. Drainage ditches were put around each tent and around the camp. From time to time, when the tides were extremely low and the corresponding level of the rice paddies low, the water in the ditches became stagnant. During these times, however, frequent spraying prevented the fly problem from becoming overpowering.

Two large 3 000 gallon rubber water tanks were set up, and the city delivered water to one tank. Because the water was of questionable purity, it was run through the filter and the hypochlorinator and then put into the second tank. A hose and spigot allowed the refugees to draw it as needed. The tanks and machinery were enclosed by barbed wire and a guard was posted.

The Vietnamese government took over one tent and set up Army recruiting offices. About 100 men would join daily. There were other tents for the passing out of American aid which consisted of 600 grams of rice per day per refugee, mats, firewood, vegetables and blankets. The United States Information Service passed out information pamphlets by the hundreds. Posters throughout the camp indicated the location of various key places and disseminated information on general subjects.

The general spirit of the camp was good, and the co-operation between the Vietnamese administrators and this unit was excellent. From time to time the problem of refugee administration became very difficult, but it was always resolved to the satisfaction of both parties because the common interest was the rapid evacuation of the refugees of Tonkin.

EMBARKATION SITE

The refugees were dusted with DDT at the embarkation site on the river before they were put aboard French LSMs (landing

ship medium) and taken down the river to the American transports anchored in Baie d Along

Five men handled the DDT guns which were attached by a hose to a compressed air machine and 5 percent DDT powder was used. The first man would dust the refugee's head thoroughly, the second the inside of his hat and some of his baggage, the third would push the gun up the front of his shirt, the fourth up the back. The fifth man would attempt to get the gun down the front of his pants. This usually met with difficulty, but because the Vietnamese have sparse pubic hair it was not considered essential. The unit medical officer observed all refugees as they came down the line to prevent any refugee with obviously serious or contagious disease from boarding.

The Vietminh mentioned our DDTing in their anti American propaganda, telling the people that it was highly poisonous and that the Americans were doing it to harm them. As a consequence the refugees, even after spending several days in the camps, were still extremely apprehensive of the embarkation site.

Representatives of various charitable organizations of the Vietnamese government were at the embarkation sites. The refugees were given about one dollar's worth of piasters, a loaf of bread wrapped in a propaganda leaflet, blankets and diapers for the infants. Public Health had a mobile medical ambulance and emergencies were treated by the Vietnamese nurses and this unit's doctor.

Embarkation was carried out two or three times weekly in August and September. Then it slowed down and now in December the refugees leave at the rate of 6,000 every 7 or 8 days (on American ships).

SUMMARY

Observations and problems encountered in 5 months of working with the refugees of Indo China are presented. The construction, sanitation, and epidemiologic aspects of the three large refugee camps are discussed. Pre-embarkation delousing, vaccination, and medical observation are presented. It is hoped that this article may be something of a guide for military physicians who may find refugee movements within their ken in the future.

*Thirst of the yellow, black, brown, and white man
is all the same*—Martin T. Fisch

PROBLEMS FACING MILITARY MEDICINE

HONORABLE DEWEY SHORT

A short excerpt from this speech was quoted in an article entitled "Medical and Dental Officer Candidate Program" which appeared on pages 1469 to 1475 of the October 1955 issue of this Journal. Because of requests for the full text of the speech and with the kind consent of Congressman Short the complete speech is being reprinted from the Congressional Record.—Editor

Mr. Chairman, ladies and gentlemen, it is with some trepidation that I appear before this distinguished gathering today. I have tremendous respect for doctors—not only doctors of medicine, doctors of osteopathy, doctors of philosophy, doctors of dentistry, but also for doctors of divinity. But rarely in my life have I appeared before a group who quite recently would probably have very cheerfully cut my throat—and who possess the skill to do the job neatly.

I am referring, of course, to the recent extension of the Doctors Draft Law which passed the House and was signed into law on June 30.

In my own small way, I undoubtedly have contributed to the potential displacement of some of you for a 2 year period.

It is an unfortunate, discriminatory piece of legislation, this Doctors Draft Law, but I want to assure you that it is absolutely essential.

Perhaps it is the penalty you share for belonging to a very select organization. As physicians and surgeons you hold an extremely responsible position in our economy. You have studied long and hard; you have met the best competition and only the finest survive.

And because your services are so much in demand, it was necessary for us in the Congress to enact legislation to compel you to serve in the Armed Forces even though you are beyond the regular draft age.

Now I want to discuss this subject with you today because it is important not only to you and your colleagues, but also to the civilian population and our armed services.

Statistically, we had no choice but to extend the Doctors Draft Law. The draft age has been reduced to 46 from the old age of 51, and from what I can gather from the facts that have been presented to us, doctors will be taken up to that age during the next 2 years.

Read before the Postgraduate Medical Assembly of South Texas, Houston, Texas, July 1955.

We ended the situation with regard to physicians and dentists who are now over 35 and who previously applied for a commission in the medical or dental corps and were rejected for physical reasons but we could not make that provision retroactive for those now serving on active duty. That also is discriminatory—for the doctor who was able to stay out of service and who meets the criteria of this amendment will not have to serve while the doctor who is now serving on active duty who otherwise could have met the criteria must remain on active duty until he completes his obligated period of service.

Wherever we turn in this whole manpower problem we face inconsistencies and discrimination even the regular draft act is discriminatory. Some must serve and others are deferred. Those who are healthy must go, those who are disabled remain behind. Those who are engaged in essential industry are deferred, those who are not must serve.

This whole idea of compulsory service is repugnant to me and all ways will be better. I am also practical enough to realize that our Nation must possess an armed force capable of defending this Nation should that occasion arise. And the health of our armed services must be paramount in our thinking.

One of the serious problems that we face in this Nation is a shortage of doctors and a far less immediate one is a maldistribution of practicing physicians.

I do not believe that our medical schools are adequate in size to graduate the number of doctors that our country requires. And unfortunately since we are all human beings the natural tendency of many physicians is to go to larger cities where the patients are more plentiful and where the level of income is high enough to justify charging the fee.

That means that we have areas in this country that are inadequately staffed with doctors. And as far as I can see that situation will remain with us and grow worse unless we take positive steps to increase the input of medical students and the output of medical school graduates. I would like to see that accomplished with a little Federal incentive as possible.

It is not my purpose to deliver a sermon but I would like to give you some of my ideas with regard to this whole problem of medical care.

Obviously we cannot continue the doctors draft law for an indefinite period. Therefore the armed services must find a procurement method other than the doctors draft law.

Now so long as we have the regular draft law in effect we will be able to obtain a fair share of medical school graduates since anyone who is deferred for any reason under the regular draft remains liable for induction up to age 35. But we cannot depend entirely upon medical

school graduates as a source of doctors for our armed services because then we would be depending entirely upon young men who have just completed their internships. The armed services need specialists and experienced physicians just as much as any other group of people. But we are not attracting experienced physicians and specialists in our Armed Forces on a career basis. And that calls for a little self analysis.

Why aren't we getting more doctors to make a career of the armed services? Is it economic?

Yes, partly. It is a little hard to compare a major's pay with the \$15,000 net income annually of the average practicing physician in the United States.

But I don't believe it is entirely economic. Pay is not everything. I think it may also involve the dignity of the profession, the constant changes of station and perhaps to some extent the unintentional subjugation of professional initiative.

I am convinced that the average doctor has a unique personality of his own, a rugged individualist—if you will. He has to possess that sort of personality; otherwise he would never have had the courage and stamina and determination to spend 4 years in college, 4 years in medical school, a year of internship, and 2, 3, and 4 years in residency training before he considered himself qualified to practice medicine.

And I suppose the average physician is not willing to enter into a form of regimentation in which his own personal attainments and ability will not be rewarded in proportion to his achievements. I believe that too may be a factor in this medical procurement problem in the armed services.

I don't know the full answer, although I can assure you that it is being studied carefully with a hope that some solution can be found. Basically, the medical situation in our armed services is one of supply and demand. So long as the demand exceeds the supply, the attractiveness of service life will undoubtedly take a back seat to the normal civilian life where the physician is his own boss.

The ultimate solution to the whole problem of supplying doctors for our Armed Forces and also for the civilian economy is a substantial increase in the number of doctors.

While the doctors draft law was under consideration in the House and in the Senate, Members of Congress were besieged with telegrams and letters from doctors urging the elimination of the doctors draft law. The contention was made that if dependent medical care were abolished and all other persons now entitled to medical care from service doctors were denied this benefit, there would be no need for a doctors draft law.

Well, I want to discuss that subject because it is of fundamental importance to you and to the Armed Forces. The number of individuals

who are theoretically entitled to medical care from service doctor is large. But when you compare the actual statistics of medical care furnished to person other than service personnel it becomes apparent that the existing legal entitlement is not being used. As a matter of fact if all medical care were abolished for all personnel now entitled to medical care from the armed services other than armed service personnel and their dependents we would only be able to eliminate about 40 of the 10 000 physicians now serving on active duty with the armed service and the Public Health Service. And if we abolished all dependent medical care in the United States we would only eliminate an additional 581 doctor from the armed services and the Public Health Service.

The next contention was that the ratio of physicians to armed services personnel is unrealistic—too high. It is now approximately 3 044 per thousand and you will hear statements made that this is so much greater than the civilian population that it obviously can be substantially reduced.

Well ladies and gentlemen medicine in the armed services is not confined solely to treating servicemen who are ill. Sometimes we all overlook the very basic reason that we have an Armed Force. We constantly strive to impose upon our armed service the same business standards that apply to the United States Steel Corp. General Motors. H. Mable Oil and countless other groups in the country. But you cannot compare producing corporation with insurance policy. Our Armed Forces exist so that those corporations and the people who work for those corporations and the doctors and dentists and veterinarians and mill business owners and farmer and railroad engineer and students and mothers and fathers and everybody else in this United States can continue to live in freedom. Of course maintaining our Armed Forces is costly. Factually expensive. And of course there is waste. Of course there is duplication unnecessary transportation administrative makes poor decisions about buying but we are dealing with an organization which employs almost 5 million people. An organization that spends 65 cents out of every Federal tax dollar on organization that spends between forty and fifty billion dollars annually. An organization whose expenditures exceed the income of 18 of the largest corporations in the United States.

The Armed Force isn't a business operation. It exists for the purpose of preserving this Nation. And in order to preserve this Nation we have to have men mentally and physically fit to perform all type of duty.

We have to have doctors who know how to prepare for the medical support of an amphibious operation. We have to have doctors who know all of the medical problems of logistical support of a land operation. We have to have doctors who are familiar with the human physical limitations in the problems of space. We have to have doctors who are

experts in field sanitation preventive medicine and all of our doctors must have some conception of what a military organization is how it functions and what their responsibilities would be if they were called upon to take command of a medical battalion.

So all the time of a doctor in the Armed Forces is not confined to the treatment of people who are ill perhaps some doctors spend most of their time treating patients but when that doctor is serving in that capacity another doctor is studying a supply problem or a study involving the results of underwater demolition or the proper way to treat victims of nuclear warfare

So it is not quite fair to our armed services to compare the ratio of physicians to the civilian population and then conclude that the ratio in our armed services should more nearly approach that ratio. The problem in our Armed Forces is to keep our people healthy and not wait to treat them after they are sick

I am not trying to defend poor administration for I would be the first to admit that there are undoubtedly a few places in the Armed Forces where improvement can be made in the proper utilization of physicians and their skills. And I can fully appreciate how a pediatrician feels when he is called upon to leave his own practice only to end up in a dispensary treating the children of service personnel. And that of course leads me to the various problems of dependent medical care

Now traditionally we have provided on a space and facilities available basis medical care to the dependents of service personnel. But I don't know of anything that would more adversely affect the morale of our Armed Forces than to eliminate this entitlement. On the other hand it is obvious that we cannot continue in good conscience to draft individuals and ask them to treat the dependents of our service personnel. The number involved is not great—581 is the approximate figure but even if we eliminate 581 that would be 581 less doctors over the age of 35 who would have to be ordered to active duty. So there we are on the horns of a dilemma. Can we jeopardize the morale of our Armed Forces to the extent of eliminating dependent medical care in order to alleviate to some extent the situation with regard to the drafting of doctors over the age of 35?

Well obviously the answer for the next 2 years is that the Congress was not willing to jeopardize the career attractiveness of many thousands of experienced men in order to reduce to just a small extent the number of physicians who will be required to serve in our Armed Forces who are now over the age of 35. But we recognize the fact that we must find a solution to dependent medical care. Obviously we are again on the horns of another kind of a dilemma. For if we abolish all dependent medical care in the Armed Forces then many of the physicians who now are willing to stay in the Armed Forces until reaching retirement age will leave since the present diversification

had been no episodes of cough or hemoptysis and no precordial or chest pain except with these acute episodes

The family history revealed that his father died at the age of 64 during an acute heart attack. The mother was living in her seventies and had kidney disease. Three siblings were dead: one of tuberculosis, one of Bright's disease, and one of unknown cause but suspected of having had some form of heart disease. This sibling was also described as being nervous.

SUMMARY OF FIRST ADMISSION

The patient was in a state of shock on arrival at the emergency room of the hospital. His pulse was 160 to 180 per minute, his blood pressure was at shock level, peripheral cyanosis was present, and his abdomen was markedly tender and rigid. He had had coffee ground vomitus and tarry stools for several days. He was taken to a surgical ward with a tentative diagnosis of a perforated peptic ulcer and a nonsurgical regimen (Scooley treatment) was instituted. He had a markedly enlarged, tender liver and an enlarged heart. A cardiologist was called several hours later because of his precarious condition, manifested by a pronounced tachycardia, rales in his chest, and critical appearance. He was immediately given digitalis with 1.6 mg of cedilanid (brand of lanatoside C). Oxygen was also given, and there was a rather remarkable improvement within the next few hours. His pulse rate slowed, his lungs cleared, the hepatic enlargement receded, and his pain, nausea, and vomiting ceased. He was transferred to the medical service for further study and treatment where he remained for a month before being discharged as improved.

Physical Examination. The following pertinent physical findings were recorded during the admission. There was no thyroid enlargement or unusual adenopathy, and no abdominal masses were palpated after the acute abdominal condition receded, except for a residual enlargement of the liver. The kidneys were not palpable. No pedal edema was present, but peripheral veins were distended. The thorax was symmetrically developed, and there was good expansion. The heart remained enlarged (by percussion) and apex beat and left border were at the anterior axillary line. Heart tones were fair, but no murmurs were heard. The second sound at the aortic area equaled the second at the pulmonic area. An occasional premature contraction was present. Peripheral pulses were normal. Blood pressure remained within the low normal range. Neurologic examination revealed nothing abnormal. The fundal arterioles were normal.

Laboratory Studies. An electrocardiogram at the time of initial cardiac examination revealed a moderate tachycardia. Serial electrocardiograms after conversion to sinus rhythm were described

as "presenting marked left axis deviation, prominent P waves, occasional premature contractions, deep S waves over right precordium, and depressed S T segments suggesting digitalis effect." No serial changes of an acute myocardial injury were seen.

Initial roentgenograms of the abdomen revealed no free gas in the peritoneal cavity. Findings of a gastrointestinal series in the convalescent period were considered normal. A roentgenogram of the chest on the second hospital day showed the bronchovascular markings to be markedly decreased in the right costophrenic angle. Within this area, there were two patches of increased density measuring about 2 cm in diameter. The right side of the diaphragm was high, and the heart markedly enlarged in both diameters. A roentgenogram 3 days later showed the right costophrenic angle obliterated by fluid extending upward along the lateral chest wall. There was no apparent change in cardiac shadow. Two weeks after admission a roentgenogram showed the lung fields to be clear; the heart remained enlarged in all diameters but showed no enlargement of the pulmonary conus in the posteroanterior view. The esophagus was displaced posteriorly by what appeared to be an enlarged left auricle.

On admission, the white blood cell count was 9,500 per cu mm with 91 percent neutrophils and 9 percent lymphocytes, hemoglobin was 13.5 grams per 100 ml. The urinalysis revealed nothing abnormal. Serum amylase was normal on admission.

Course in Hospital. The patient improved with digitalization, rest, and general medical care. A cardiac murmur was first heard one week after admission, when he was described as having a sharply localized apical systolic murmur, and an accentuated P₂. He was discharged to his home 6 weeks after admission but was advised not to work for several months. Six months later he was readmitted to the Army hospital in a state of acute respiratory distress. Three weeks before this second admission, an attempt to return to work had precipitated pronounced exertional dyspnea, and had increased nocturnal dyspnea to a point where he had several severe episodes a night.

PRESENT ADMISSION

On admission his weight was 137 pounds and he appeared chronically ill. There was a dusky cyanosis of the lips and extremities with a 3+ pitting edema of the lower extremities. His temperature was normal, and his pulse was 115 with regular sinus rhythm. A harsh grade III systolic murmur was noted which was said to be transmitted to the base. The point of maximum cardiac impulse was felt in the anterior axillary line at the sixth intercostal space. The liver was palpable below the costal margin. The leukocyte count, the hematocrit, and the sedimentation rate were normal. The blood urea nitrogen was normal, and there were

no significant abnormalities in the urina. The roentgenogram of the chest revealed an enlarged cardiac shadow much the same as before with increased bronchovascular markings in both lower lung fields. Repeat electrocardiograms at this time revealed the same abnormalities as before with a sinus tachycardia occasional premature contraction abnormal P waves left axis deviation and abnormal ST T segments. No essential change had occurred since the patient's first discharge.

He was placed in an oxygen tent given quinidine sulfate and the dose of digitalis was increased. His cardiac rate slowed the dyspnea lessened and on the second day he was removed from the oxygen tent. His pulse rate on the morning of the third day was in the 80s he was much improved and was hungry. On the third day however he suddenly developed cyanosis and died.

DISCUSSION

D r M w y Inasmuch as all of you have copies of the protocol and have read it over we will not go over it in detail but will only briefly outline the salient points in the history and clinical findings project the chest film (figs 1 and 2) and ask Doctor C to check first to give his interpretation of the ECG given to him this morning (fig 3).

D r C m h l The electrocardiogram shows a sinus tachycardia with a rate slightly in excess of 100. The axis deviation is rather markedly to the left and of interest is the pattern of the deep S wave in standard lead I II and III. There are QS waves in lead II and III. There is a tall R wave in the right arm unipolar extremity lead and QS complex in the left leg unipolar extremity lead. We were further interested in V leads. However over to lead V the transition zone has not been reached and potentials from the epicardial surface of the right atrial were still being recorded. In addition there is nothing of the atrial complex in leads I and II and the P wave in aVL is diphasic. The P waves of V are diphasic predominantly inverted and the P wave through the later lead are notched.

There are several phases we can be sure of and several things we cannot be sure of. First of all we can be sure there is a sinus tachycardia. I should quit right there. In addition there is prolongation of the Q-T interval and using Bazett's equation I calculated the Q-T interval with k or QTc if you prefer the term equalling 0.45 seconds. I believe that the notching of the atrial complexes suggests left atrial enlargement and the contour definitely suggests left atrial enlargement. I cannot be definitive about the appearance of the P waves in the precordial leads I II and III. I would not be at all surprised if there is concomitant right atrial enlargement. The left axis deviation in

Col F d H M w y MC USA, Medical Consultant to Office of the Surgeon General
Department of the Army Washington, D C

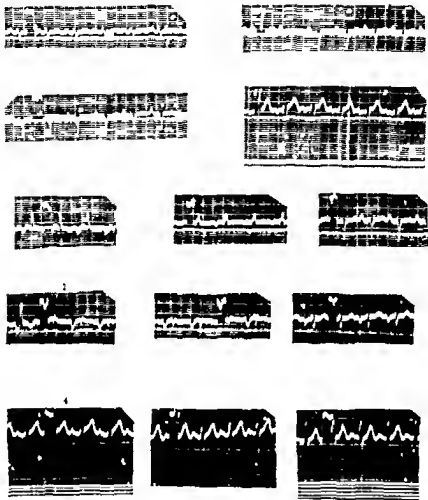
Lt. David B Casmich (MC) USN US Naval Hospital Great Lakes III



Figure 1 Posteroanterior roentgenogram of chest shortly after first admission.



Figure 2 A lateral roentgenogram of chest taken on a subsequent date.



Figur 3 Ele t oc d gr m take dur g ond dm s on

the v c t y of m r u 80 associ t d with a QS complex in l d II and

QS in III suggests to me the poss bil ty of left ventricular hyper t ophy A I indicated moment go I wi h we h d precordi l le ds V

round the back to s e what the contour of the left ventricul r precordi l leads really l o k s l k e H wever ther i an ther point that is th t the transmiss o zon be ng shifted very far nto the left

could mean another situation In the late 1920 Doctors Sylvester McGinn nd Paul White descr bed the so-called S pattern of McGinn

nd White wh ch you ee in pulmonary embolism The tr n ition z ne often is markedly shifted to the left in associat on with this conditio

If th s were a r pid ch nge over prev ous trac ngs— nd I am led to

that assumption by a description quite different in the protocol from what we see here—I think we can in addition to left ventricular enlargement also assume the possibility of a cor pulmonale I do not see ST T wave changes indicative of digitalis effect and QT prolongation would also mitigate against digitalis effect at the time this electrocardiogram was obtained My analysis then is sinus tachycardia left axis deviation probable left ventricular enlargement and possible acute cor pulmonale and atrial enlargement

Doct^r Goy tt I think the first comment to be made about this electrocardiogram is that we are faced with the interpretation of an inadequate electrocardiogram We should have more leads to the left and also high precordial leads If aVR is taken correctly and I must assume that it is I think that this patient has either right ventricular hypertrophy and/or right ventricular dilatation and atrial enlargement I agree with Doctor Carmichael that it looks like left but it may be both

Doctor W lke I agree with Doctor Goyette I thought it was more like right ventricular hypertrophy and it would be very compatible with acute cor pulmonale I would like to add one point The axis deviation is extreme This is an instance where vector analysis is of great value The axis is approaching and exceeding the minus 90° and we get to a range where it is difficult to distinguish the left axis and left ventricular hypertrophy from an extreme right axis and right ventricular hypertrophy I think this a dead ringer for severe left ventricular hypertrophy and I think the P waves in V₁ are diagnostic of left atrial enlargement

D ct Joh son My interpretation is very much like those already given We can have all kinds of interpretations here First of all I didn't think that the complexes in leads II and III were QS complexes but that is not of too much importance because the axis is still the same But I must say I thought more of right ventricular hypertrophy and dilatation The duration of the QRS is a little prolonged and I think it looks a bit like incomplete right bundle branch block Other wise I agree

D ct P llo k I agree with Doctor Johnson. I would add that I don't see a true left ventricular complex anywhere and I would like to see it somewhere before being really sure about it But I think this is the other type of left ventricular hypertrophy pattern in which the heart has a very bizarre position with left apex posteriorly

C l Edwin M Goy tt MC USA Chief f Cardiol gy Serv Ft Dix Army Hospital De C l

Lt. C l Weld J W lke MC USA Chief f Cardiol gy Service Brooke Army Hospital Ft Sain t Louis T

C l Richard P J h AC USA Chief f Card iology Service V lley Forge Army H pital Pho ixvill p

C l Byron E P llock MC USA Ch f f Card i gy Serv L tterman Army H ospital Sa Francisco Calif

D r M w y Our time s r p dly passing and you can see there i no un n mity of opin on on the nterpretation of th ECG that is ava l able I mighr pos t out this b ut the ECG you h ve No on knows exactly when it w s t k n whether it was take befo e the pat ent was fur t sick or whether r was r k n during his l st adm s io The pre v us d c ript on given in the proto ols referr ng t th s ECG does not agree w rh wh t you gentlemen are nr rpreting n the ECG Doctor John on what s your d ag is?

D r J h I thi k thi is an unusual case of rheum t c v lvular hea t dise s with vey marked aortic valve teno is and prob bly mitr l tenos s I b se thi diagnosis on the f cr th t a systol c mur mur w head at the apex that could ha bee tr nsmitted from the ba e

D r M y What were these episodes of severe p in that this man had ov a period f 6 yea ?

D r J h I thi k that th mechanism is prob bly on the ba is of acute hep tic distent on wh ch resulted from right hea t failure as soc ated with left he rt f ilure—the so called Bernheim s syndrome Th re wa marked hypert phy of th left v ntricl which included the eptum a d encroached upon the volume of the ight v ntricle a d the infer ot vena c va w s unable to end its bl od nto th r ght s de of the h art s t sfactor ly Th could h v caused th se episodes of acute hepatic d t nt o In a other aspect I would like to ment on th t very comm n syndrome in m r al st nos s ate these episodes of pain n th r ght uppe q dra t They ar o ch r rer tic that one might de ibe th m by ay g th t t th o-called g l bladder yndrom of m r al st no is Because m r al ste s s s moe common in wom n it ofte mim c the yndrom f gallbl dd t dise e H wev r n this patient I th nk the r c ten is was the p edom ting les on a d that he had so lled Bernheim syndrome to expl in the cut h p tic d ste t o

D r G y n Th re is one thing this patient h d that I am sur ab ut I m ure he had r least one pisode of acute cor pulm n le I am go ng t hang my hat on th t one th g I am g ing to trust my int rpret t n of the electrocard ogram and say th t I think th s patient had chr nic co pulm n le due to repeated epis des of pulmonary emboliz ti n Th only oth r d agno is I would ent rt in seriously would be th t f ndocard i f broel st s Howe er again t th t d i gnos i I th nk the course w s rather long There are usually predominant sig s f dysp Th re are u lly sy tem emboli It is true that frequen ly ther re p lmonary embol r o but I think the syst mic usually predominate The elect ocard ogr m oft n h ows a bundle b anch block There i freq ntly a po s sive family h story I ag ee w th Doctor Joh son that this ma h d pig str pain because of acute diste tion of the live capsule I think p ob bly hi ep sode of so-called vom r s g of blood and p s i g of rar y stools w blood wh ch he coughed up lth ough f you told me that he never oughed blood t wo ldn t disturb

and additionally go far out on the limb. The marked reduction in weight in this patient—from 160 pound with relatively little evidence of edema to 130 pounds with considerable evidence of edema—suggests to me a rather profound weight loss and as we all know if Doctor Goyette and I are right this is recurrent embolization. In a younger person we like to look for the source of the emboli and we of course are all familiar with the well known dictum that in a patient with recurrent thrombophlebitis one should always look for carcinoma. So I think that we have to consider the possibility that if this is recurrent embolization we should certainly think in terms of a hidden carcinoma possibly in the abdomen or possibly in the pancreas. However we know that it doesn't have to be there and it could be for instance in the prostate or in the testes. Even though this patient could ultimately wind up with Bernheim's syndrome with marked left ventricular hypertrophy it seems hard for me to believe that a person with a predominantly left sided lesion could escape having some early manifestation of respiratory difficulty such as nocturnal or other dyspnea. Except for the acute episodes when he experienced rather agonizing dyspnea which would certainly go along with the acute cor pulmonale the signs of ventricular failure predominate in this patient. There are other things which we should clearly consider for instance the rheumatic and the marked weight loss one little statement even brought to mind the idea of hyperthyroidism. However after seeing the electrocardiogram I must say that I was inclined to dismiss that.

Dr. Wolk: I would agree with Doctor C. much and I do not think he has left me much to say. I think this patient presents obvious peripheral embolism yet he has a heart configuration that is not explained entirely on that basis. I think he has diffuse myocardial involvement of both the right and left sides. If I had to tie it all into one diagnosis I would diagnose it as endocardial fibroelastosis with parietal endocardial thrombosis. I think the cardiac configuration suggests an enlargement of all parts of the heart and possible beginning involvement of the valves. There is no other obvious cause here and because the program this afternoon was devoted to a discussion of esoteric diseases I have chosen this diagnosis.

Dr. Mowry: Doctor Pollock, did you have any thought of supraventricular tachycardia possibly being a cause of his epigastric pain?

Dr. Pollock: I do not think so. When he came into the hospital his pulse was 160 to 180 and we know that paroxysmal supraventricular tachycardia is at a regular rate that you can almost clock. If you take the pulse every 15 minutes it should hit the same rate. It was pointed out that he was in shock at that time but a pulse rate of 160 to 180 is more consistent with what you find in ordinary shock without having to postulate a paroxysmal tachycardia with a varying degree of tachycardia. We do know that at one time he had a nodal rhythm on one electrocardiogram which unfortunately we do not have (fig. 4). We don't know how much tachycardia he had at that time. I would not be a

position to rule out attacks of tachycardia but I just do not see the evidence for it and so far as ventricular paroxysmal tachycardia is concerned that usually would not be consistent with the 8 months that passed without his having to have specific treatment. It usually indicates a rather severe disease and severe difficulty which causes the tachycardia.

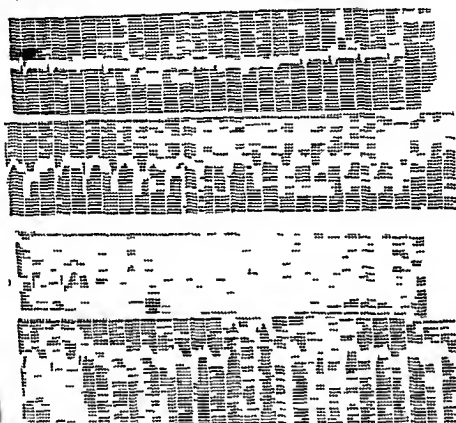


Figure 4 Electrocardiogram (first admission. (This ECG was not available to the Conference.)

Dr. Mowry: Doctor Walker, will you say a word about this cardiac standstill that occurred when he was operated on for so-called appendicitis about 3 years ago?

Dr. Wolke: I think cardiac standstill is not entirely uncommon during operation. The usual factors that are thought to be important are inadequate ventilation, perhaps with accumulation of CO_2 , perhaps there are reflex factors that caused it, as indicated by the fact that a common time for it to occur is early during the anesthesia. Anyone with pre-existing myocardial disease would of course be more prone to have such cardiac standstill. I believe it was not stated how rhythm was re-established.

Dr. Mowry: What disease did you say would be more likely?

Dr. Wolke: I just said a pre-existing myocardial disease.

D r M w y What kind?

D r W lk I think a patient with any kind of myocardial disease would be more prone to develop ventricular standstill or fibrillation. I had not thought of any particular specific disease being associated with cardiac standstill.

D r M w y Isn't there one disease that had been postulated as one of the diseases here—namely aortic stenosis—very commonly a cause of cardiac standstill and sudden death or rather that cardiac standstill during operation is more common probably in patients with aortic stenosis than in any other type?

D r W lk Syncope is common. But that wasn't my diagnosis.

D r G y H As a matter of fact fibroelastosis which was my number two diagnosis is a very common cause of cardiac standstill. That is why I thought of it. Persons with other condition ment on a particularly rheumatic heart disease do not tolerate operation too badly unless extremely decompensated. Here the abdomen had just been opened and the heart stopped and I think from what little reading I have done on it it is not at all an uncommon characteristic of fibroelastosis.

D r M w y While you are still talking Doctor G yette what are the causes of sudden death such as this patient had?

D r G y H I think in this particular case that the two most likely possibilities are (1) a massive pulmonary embolus which caused his death or (2) quite likely an arrhythmia which passed rapidly into ventricular fibrillation or began as ventricular fibrillation due to the severe cyanosis associated with either the pulmonary embolism or fibroelastosis.

D r M w y Do you think cyanosis of any particular significance in this case and do you think there may be some type of congenital heart lesion here?

D r G y H I am paying a great deal of attention to the cyanosis in this case. When we see cyanosis we think of one of three conditions (1) A right-to-left shunt which usually produces persistent cyanosis (it was not persistent in this patient so I do not think that it was the cause of his cyanosis) (2) stenosis which produces peripheral cyanosis and (3) some sudden interference with aeration such as occurs in pulmonary embolism or infarction. I think that because this man was always cyanotic with these episodes and because he died suddenly his death must be placed on the latter basis and this is one of the things to which I have attached a great deal of weight.

D r M w y Doctor Johnson will you talk a little bit more about this systolic murmur? How does it fit in with the diagnosis of mitral stenosis or aortic stenosis?

Doctor Johnson Probably the most common valvular lesion to be overlooked clinically is aortic stenosis. Usually the reason for this is that physicians do not listen to the base of the heart; they only listen to the apex. But that is not a true explanation. I think that with patients who are sick and who have tachycardia, it is very easy to overlook significant murmurs. In the diagnosis of aortic stenosis—even though occasionally it happens that the murmur is loudest at the apex as compared to the base—if one listens very carefully in the right space one hears a very classic diagnostic pathologic murmur—the rough rasping harsh murmur of the stenosis. It is much more common to overlook this lesion in patients who are in their 50's, 60's, and 70's than in a man of this age.

Doctor Murrey I could go on with this discussion for some time but I understand that there is a guest speaker to discuss this case. It has been suggested that the diagnosis is (1) heart disease, perhaps mitral stenosis, perhaps aortic stenosis, or a combination of both; (2) myocardial fibroelastosis; or (3) acute and chronic cor pulmonale. These are the three main diagnoses which have been made.

Dr. Johnson's diagnoses

1. Rheumatic valvular heart disease with aortic stenosis
2. Bernheim's syndrome

Dr. Goyette's diagnoses

1. Cor pulmonale
2. Chronic pulmonary embolization

Dr. Pollock's diagnoses

1. Mitral stenosis
2. Congestive heart failure
3. Chronic pulmonary embolization

Dr. Carmichael's diagnoses

1. Endocardial fibroelastosis
2. Chronic systemic and pulmonary embolization

Dr. Orbison's diagnoses

1. Recurrent pulmonary embolization
2. Chronic cor pulmonale

Dr. Walker's diagnosis

- Endocardial fibroelastosis with parietal endocardial thrombosis

PATHOLOGIC FINDINGS

Doctor Ernst Doctor William Howell¹ who reported this case in the *Texas State Journal of Medicine* is here today and I hope he will comment later. Doctor J. N. P. Davies, Professor of Pathology at



Figure 8 Photomicrograph showing endocardial fibrosis.
($\times 50$)

The entity under consideration today has been variously described in the literature as endomyocardial fibrosis or fibrous scars cardiovascular cell genesis endocardial fibrosis or fibrosis with mural thrombosis and endomyocardial necrosis.

The earliest accounts of this disease dealt mainly with children but more and more reports on similar cases in adults are appearing in the literature. Clinically there is cardiac hypertrophy sometimes lacerations and conduction time with sudden death or death by congestive failure—often without clinical or autopsy evidence of coronary or alveolar disease.

Anatomically there may be perihy or diffuse thickening and opacity of the endocardium consisting either of collagenous tissue alone or collagenous and elastic tissue together which may extend among the muscle fibers along the vascular septa. Added to this there is frequently a mural thrombus overlying the thickened endocardium with in the chamber involved and embolization.

In general the anatomical findings in both the child and the adult bear some resemblance to each other but there are points of difference. Mural thrombosis is more frequent in adults although it has been noted in children. Congenital defects are frequently encountered in children.

Although the elastic tissue element has been stressed in many case reports there were several rather large series of adult cases reported during the past 2 years in which elastic tissue was not demonstrated

There are numerous other pathologic entities which may cause either focal or diffuse endocardial thickening and these should be ruled out before a diagnosis of endocardial sclerosis is tenable. Included in this category are coronary disease with infarcts, endocardial pockets appearing beneath incompetent valves, a spread of fibrosis from the valves to the endocardium in subacute bacterial endocarditis, some cases of rheumatic and diphtheritic myocarditis and disseminated lupus erythematosus. It is not present in congestive failure unless complicated by anoxia due to vascular sclerosis and possible infarction.

Many theories as to its causes have been advanced and one of the most popular when the disease is found in children is that it is a congenital defect because it is frequently noted in patients with other defects. It has been observed in siblings. In some patients, particularly adults, there is usually a family history of obscure heart disease as in our patient and a congenital cause in these adult cases is suspected on the basis of a smaller degree of involvement at the time of birth. Infectious disease in the mother during pregnancy has been found in a significant number of cases. An inflammatory cause has been suggested but bacteria have not been found and the patients are usually afebrile.

It has also been suggested that at least some of these cases may be caused by a dietary deficiency disease such as beriberi but the findings at autopsy, the history of dietary inadequacies or the response to therapy should assist in ruling this entity in or out. Myocarditis has been considered but usually no such history is obtainable. Some of the findings in these patients include fibrinous changes with staining characteristics found in other collagen diseases and therefore this entity is believed possibly related to that group.

Another theory places the disease on a mechanical basis due to stretching of the endocardium and the dilated heart but a satisfactory explanation for dilatation is frequently not forthcoming.

There is one attractive theory particularly applicable to children which places the blame on a situation of anoxia. There have been carefully documented cases where anomalies that could conceivably result in anoxemia of the affected chamber were present. These included the situation where the left coronary arose from the pulmonary artery and in pulmonary atresia where hypertrophy of the right ventricle and fibroelastosis of this chamber were found. It was found in the left ventricle in aortic atresia both with and without interventricular septal defects and in the left atrium and ventricle in premature closure of the foramen ovale without defect. In premature closure with a septal defect and atresia of the mitral valve the fibroelastosis was present

in the left atrium but not in the left ventricle. Cases of premature closure with a septal defect fail to show the condition.

Pathologic diagnoses

- 1 Endocardial fibroelastosis with mural thrombosis at apex of left ventricle
- 2 Infarct of spleen
- 3 Chronic passive congestion of liver

(Doctor Howell related the findings in another similar case.)

Dr. E. : Are there any comments from the floor? Or from the panel?

Doctor Davies: We should be very happy to see your material now and to hear your thoughts on this entity.

Dr. D. : It is a very great pleasure to be here in this very famous hospital and meet you gentlemen of the United States Army. I am sure that our part of the world we never seem to see the senior service and although we are thousands of miles from the ocean we frequently see your colleague from the Navy which always seems a bit odd to us.

I would like to draw your attention to this entity. It is important to us in Africa because it informs about one in five of all our patients with congestive cardiac failure. It is therefore our most common and important form of heart disease clinically and to a great extent pathologically. We have thought confirmed because it first came up as a military problem being recognized in African troops in Cairo in the middle 1940 by Bedford and Constance of the British Army. About the same time in Africa independently became aware of the entity and I have seen about 106 cases since 1946. In some patients the condition is minimal and confined to the apex but characteristically this condition presents a mass of fibrous tissue at the apex often with a rolled rather sharply defined surface. This process may extend upward to involve the mitral valve and the mitral valve may fuse with the ventricular endocardium. It may also go down into the myocardium and that is why we call it endomyocardial fibrosis. A great mass of clot may partially fill the ventricle and underneath the clot the fibrosis is found.

The wall of the septum is almost invariably spared. Sometimes you see a condition in which the whole of the inside of the ventricle is just a mass of white fibrous tissue looking as if it had been laid on with a paint brush. You may find a tremendous amount of calcification in the endocardial mass. You also get and not infrequently considerable calcification of the mitral valve. It occurs on both sides of the heart but there is one difference between the lesions in the right ventricle and those in the left ventricle and that is that though basically similar if the lesion in the right ventricle grows over certain

size it leads to obliteration as we call it of the right ventricle. We recognize this from the outside by a highly characteristic depression of the apex of the right ventricle which is a puckered indrawn scar and we know that when we look inside we are going to see a considerable degree of fibrosis of the right ventricle. You may see a layering of the fibrous tissue which has as it were sealed off the triangular apical area and has reduced the cavity of the ventricle to a saucer. The blood comes in swirls in the saucer and goes out through the infundibulum and not down to the apex at all. The tricuspid valve may also be involved in the process.

We have never seen any valvular lesions in the absence of an apical or other lesion of the myoendocardium. The involvement of the different regions of the heart is about equal between the two ventricles but much more severe lesions are present in the left ventricle. In my experience 12 of them were very severe as opposed to only 9 in the right ventricle. The mitral valve is involved in 75 percent of cases and if you are equating competence with adhesions of the posterior cusp then 18 of those cases were in mitral incompetence and 2 of them seemed to be stenotic. The tricuspid was involved in 72 percent the aortic and pulmonary valves are never involved.

The weight of the heart in these African patients tends to be rather low. It ranges from about 130 grams to about 680 grams usually it falls below 500 the weights of most actually ranging from 200 to 400 grams. So broadly speaking these hearts are not hypertrophied.

The incidence of mural thromboses in 32 hearts was as follows: 41 percent of the hearts showed mural thromboses in the left ventricle and 16 percent in the right. 6 percent showed it in the left auricle and 34 percent in the right. Despite this embolic phenomena in Africans are virtually unknown. In something over 100 cases I have seen about three or four of emboli only.

The autopsy diagnoses of 231 recent cases of heart failure showed that this disease was responsible for 14.3 percent being exceeded only by 14.7 percent with syphilitic aortitis and 16 percent with renal hypertension. The cause was not determined in 14.7 percent. Essential hypertension is virtually not seen and we did not have a single case of coronary thrombosis. In fact I have not seen a case since I left this country in 1950.

The preceding figures possibly even underestimate the incidence of this condition. In 167 cases very carefully studied by my cardiologic colleagues at the postgraduate school of London it was reckoned that endomyocardial fibrosis was responsible for 21 percent of the deaths from heart failure in the series. Syphilitic aortitis and renal hypertension were again frequent coronary thrombosis was absent and there was only one case of thyrotoxic heart failure.

Histologically layer of superficial thrombosis is often present. Then there is a layer of hyaline cellular fibrous tissue and beneath that there is always a layer of dilated blood vessels which we call the granulation tissue or vascular layer and there is any infiltration of cells to any extent it is usually very minimal in this region. Going down into the myocardium are streaks of fibrous tissue around thebesian veins but the histologic changes are rather indefinite. One might see what is called moth-eaten fibers and interstitial edema. No excess glycogen is present. The interstitial edema may become very extensive and the myocardial fibers may actually break down. There is no evidence of any relation to the fibrinoid from it in that it seems to be more a destructive rather than a proliferative lesion.

Frankly we just don't know what the cause of this condition is. We don't know quite definitely what it is not. It might be a virus condition and if we could establish more of the geographic distribution we might get a little nearer to it. I thought it might be related at least to Loeffler's disease but Professor Unger, whom I met in the city last week, denies this and as he did the pathology of Löffler's disease he ought to know what this is. It is certainly not due to any known cause of heart disease. There is no coronary disease as far as one can tell there

is a connection with anemia. I have a strong suspicion that this is malnutrition but I frankly admit that I don't have a ghost of an idea what form of malnutrition it might be. I would say that I think this

common over most of the tropics. I would like to know that it occurs not only in Uganda but in the Sudan, West Africa, the Gold Coast, I bet, and all over East Africa. I have heard of it occurring

Oman which is part of the world that you are particularly concerned with. I have heard rumors that it occurs in the Philippines and the last recent suggestion is that it is one of the commonest diseases of the hill country in India. At any rate, I think that when we all put our minds together in the future we might find that this is by no means as uncommon as we suspect. I would point out how difficult it is to reach medicine in a part of the world where a heart disease that causes sudden death is a type of disease not mentioned in textbooks.

Dr. E. D. Cox Martingly will you close the meeting?

Dr. Martingly: I had the pleasure when I was at Brooke Army Hospital in 1948-1949, our final clinical diagnosis was idiopathic hypertrophic cardiomyopathy. We considered many of the diagnoses discussed by the panel including fibroelastosis. The pathologic material I have been reviewed by many pathologists including Dr. C. Stelman, group at Massachusetts General Hospital and the present diagnosis was confirmed.

Col. Thomas W. Mangley, MC USA, Chief of Cardiovascular Service, Walter Reed Army Hospital, Washington, D. C.

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Vivax Malaria in a Returned Korean Veteran

FRED B. ROGERS *Lt ut nant (MC) USNR*

VIVAX malaria has been observed for the first time in many Korean veterans after their return to the United States. Sporadic cases of tertian malaria among returned veterans of Korean service have been reported from various parts of this country. Such delayed appearance of clinical malaria has usually occurred many months after the cessation of antimalarial suppressive therapy. Problems in diagnosis may result from not considering this possibility in those returning from areas where exposure to endemic malaria is known. In the present case, the interval between probable exposure and development of symptoms was over 15 months—about 8 months of chloroquine phosphate suppressive therapy plus 7 months after the cessation of therapy. The following case is reported to stress the fact that delay in administering adequate therapy in vivax malaria may convert a rather trivial ailment into a major illness. Also this case emphasizes that when a febrile illness appears in a Korean veteran, the possibility of malaria should be considered in the differential diagnosis. The increasing incidence of Korean vivax malaria recently reported in the United States has been proportional to an augmented interest in its detection.

CASE REPORT

A 24 year old man was in good health until 4 days before admission to this hospital on 30 June 1953 at which time he suddenly developed fever, chills, frontal headache, generalized weakness, and body aching. These complaints lasted for 1 day and subsided after resting overnight. Similar symptoms recurred 2 days prior to hospitalization; the second episode lasted about 8 hours. No dark-colored urine or any reduction in the volume of urine was reported during this period. On entering the hospital he complained of high fever, severe chills, frontal headache, and photophobia, prostration, and aching in the low back and extremities.

Past history disclosed Army service in Korea from 13 November 1951 to 28 October 1952. He had served for 8 months as a combat rifleman and later was stationed at Regimental Infantry Headquarters. His duty station had been near Chorwon, Hunchon, and along the northeastern Korean coast at and above the thirty-eighth parallel. He had taken

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antimalarial suppressive therapy (one tablet of chloroquine phosphate weekly) in Korea from April 1952 until after boarding ship for return to the United States the following November. He was discharged from the Army in January 1953 in good physical condition. His health had remained satisfactory until the present illness. No known contact with or symptoms of clinical malaria were reported prior to this hospitalization. Past diseases had included uncomplicated measles and chickenpox in childhood; he had also had an appendectomy and a tonsillectomy.

Physical examination on admission showed an acutely ill, robust white man. Oral temperature was 104.4° F. General prostration was evident. The skin was hot and moist. The conjunctivae were moderately congested, but the sclerae were clear. The tonsils were absent; the pharynx was otherwise normal. Moderate-sized discrete nontender lymph node enlargement was palpated in the neck and axillary and inguinal regions. Febrile tachycardia (rate 132 per minute) was present with a cardiac apical gallop and faint systolic murmur, initially suggesting the possibility of a bacterial endocarditis. The heart was not enlarged. Blood pressure was 100/70 mm Hg. The lungs were normal. The spleen was slightly enlarged to palpation and percussion. No flank or costovertebral angle tenderness was elicited. Rectal examination was negative. All extremities were normal.

Laboratory studies on admission revealed a normal hemoglobin (13.5 grams), leukocyte count (5,000 per cu mm with a nonspecific differential count) and hematocrit (40 percent). The sedimentation rate was elevated (corrected Wintrobe 26 mm per hour). Thin and thick smears of the peripheral blood taken at the time of rising fever and stained by Giemsa method were positive for *Plasmodium vivax*. The blood smears showed trophozoites and schizonts in various stages of development. An occasional gametocyte was also present. Reactively liberated merozoites were also seen in small numbers. Examination of the blood confirmed the diagnosis of *vivax* malaria suggested by the clinical findings. Liver function studies (serum bilirubin, cephalin cholesterol flocculation, and alkaline phosphatase) were normal. Blood cultures were sterile. Kolmer complement fixation reaction was very strongly positive (4444) (or 32 Kolmer units) but the Kahn and Venereal Disease Research Laboratories (VDRL) reactions were negative. (The positive Kolmer reaction was interpreted as a biologically false positive test attributable to malaria.) The heterophile antibody titer test was negative. A urinalysis showed normal findings and a roentgenogram of the chest was negative.

During the first few days in the hospital several typical paroxysms of tertian malaria occurred. A sharp rise of temperature was recorded reaching over 104° F within a period of 4 hours, then subsiding to a normal level during the subsequent 4 hours. Because the patient's illness was service-connected he was transferred to the Veterans Administration hospital in Philadelphia on 3 July 1953. The diagnosis of

vivax malaria once established was reported to the City Department of Health by telephone and post as required

The therapeutic regimen employed in this case was 1.0 gram of chloroquine phosphate initially followed by 0.5 gram 6 hours later then 0.5 gram daily for 2 days. The chloroquine was given in conjunction with primaquine phosphate (brand of 8-(4-amino-1-methylbutylamino)-6-methoxy quinoline diphosphate) 15 mg initially then daily for 14 days. The patient recovered clinically on the above therapeutic program. No malarial parasites were demonstrated in the peripheral blood and the Kolmer reaction was negative before he left the hospital on 13 July 1953. Repeat hemoglobin, leukocyte count and thick blood smear were normal following therapy and on subsequent recheck 1 month after the patient returned home.

DISCUSSION

Spurred by global war and the resulting widespread distribution of military personnel, an immense volume of research on malaria has been carried out in recent years. This research has covered a wide field, including studies of the parasitology, and of mosquito bionomics and control measures, and the development of antimalarial drugs, insecticides, and repellents.¹ Prior to the outbreak of hostilities in Korea in 1950, malaria in that country had attracted relatively little attention. One of the most important medical problems encountered during military activities on the Korean peninsula, however, was the high incidence of vivax malaria. Since 1950 much information has been obtained concerning the natural history of this disease in man and its response to antimalarial drugs. Henkey and associates² in 1953 reported the relapse pattern in naturally acquired Korean malaria as it appeared in over 1,500 returning American military personnel. Many parts of the United States are known to have suitable mosquito vectors for the transmission of malaria, should the carrier state in infected persons allow transmission. Last year, Burnett³ reported an outbreak of Korean malaria in California involving 34 Camp Fire Girls who were infected by a carrier who had returned from Korea. To determine the nature of this disease more accurately, Arnold and associates⁴ at the Army Malaria Research Unit at the University of Chicago recently studied six human volunteers who were mosquito-inoculated with the St. Elizabeth strain of Korean vivax malaria. Four of these heavily infected subjects, in whom the exact date of infection was known, were followed beyond the apparent spontaneous termination of the disease. Observation of these patients confirmed the impression gathered from studies in the field that Korean malaria is similar in its natural history to other temperate zone malarias and terminates spontaneously before 18 months' time. In the four patients followed up to 18 months beyond this terminal period, no evidence of continuing activity was found. About 3 years after initial in-

fection moreover transmission of the disease was not accomplished by direct blood transfusion into nonimmune volunteers

Chloroquine phosphate and related drugs effective against the erythrocytic phase of the disease do not affect the tissue phases of vivax malaria. Chloroquine by virtue of its relatively long persistence in the body will abort one or two attacks following the initial paroxysm after this interval the previous periodicity reappears. By contrast, primaquine is effective solely against the tissue phase of the plasmodia. Chloroquine used in combination with primaquine in adequate dosage therefore can now prevent relapses in practically all cases. Because of its relatively low virulence the St Elizabeth strain of *P. vivax* (causing Korean malaria) is readily controlled by antimalarial drugs. Clinical symptoms are easily masked however by the usual suppressive therapy. In addition the relatively benign character of this disease tends to promote its chronicity. This also accounts for the clinical attacks which may occur after a prolonged quiescent interval following the cessation of suppressive therapy. A recent detailed study by Hall reports a statistical analysis of 95 patients having Korean vivax malaria and reviews problems met in the diagnosis and treatment of this disease.

SUMMARY

A case of vivax malaria is reported in a returned Korean veteran. This patient first showed clinical symptoms over 15 months following probable exposure and 7 months after cessation of chloroquine suppressive therapy. In this respect he was similar to other cases of so-called benign tertian malaria seen sporadically in those returning from military service in Korea. That such cases are infrequently met in the general population is attested by the fact that this was the only case of Korean malaria admitted to this large general hospital during the past 5 years. A high index of suspicion for malaria is warranted in returned veterans with febrile illness in order to establish correct diagnoses.

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Foreign Body in the Urinary Tract

EARL C LOWRY *Colonel MC USA*

JOSEPH N LIONTI *Major MC USA*

FOREIGN bodies get into the urinary tract by one of three methods (1) Through the urethra to the bladder and thence to the ureter and kidney (2) by way of the gastrointestinal tract with erosion through the intestinal wall and (3) by external violence

Those foreign bodies entering through the urethra are numerous and the great majority of cases are not reported. They may occur in children, in mental patients, during erotic acts and possibly secondary to instrumentation or in operative procedure. Insertion of a foreign body into the urethra or bladder is common; however, for the patient to pass it into the ureter is unusual. We are therefore reporting a case in which the patient passed a thermometer into the left ureter. There are reports of a cat hair and seed bearing straw ascending the ureter, the latter as far as the renal pelvis. Common objects removed from the bladder and/or urethra are nails, rods, bobby pins, hairpins, safety pins, straw, toothpick, pencil, toothbrush handle, candle, rubber or leather tubing, and thermometers. Less commonly one may see needles, nail files, glass or plastic vials, and seeds. Even snakes, earthworms, and a watch chain have been reported.¹

Foreign bodies entering through the gastrointestinal tract arrive in the genitourinary tract in one of three ways.² Stiff or sharp objects will not pass easily through the curvatures of the second portion of the duodenum; hence, they perforate and may enter the right kidney. One of us (ECI) has seen a bobby pin do this and, in another patient, a toothpick perforate at that point and form an intraperitoneal abscess without entering the kidney. A second group of objects penetrates the gut in the region of the right colon near the hepatic flexure and from there may easily reach the kidney. Gondos³ mentioned two such cases. The third group of foreign bodies penetrates the left colon and reaches the kidney or ureter on that side. Fish bones seem to penetrate more often in this manner.

Foreign bodies resulting from external violence are seen most commonly in war casualties. Cases reported consist of bullets and mine or shell fragments. We have seen fragments of clothing,

debris and in one instance a button enter the renal pelvis in a war wound in several instances bone fragments from extensive wounds have been found in the bladder



Fig 1 I tr py l g m 30 m ut s bow & good fu
ti i the ght kidney no funct on i th left kidney and
the m m t th bladder N t t p f the m m t xt nd
beyond the bladder wall.

CASE REPORT

A 14 year old girl with th mental age nf about 8 years was ex m ned at th h o p tal on 26 January 1955 She gav a histo y of thr e epi sod s of severe urinary tract infection dur ng the p st year associated with pyuri fever nd left abdom nal p n In sp te of conti ued ther py the pyuria persisted

Physical examination was essentially normal. Urinalysis revealed large numbers of white blood cells and some red blood cells. Intravenous pyelography revealed a rectal thermometer in the bladder extending into the region of the lower left ureter. The right kidney and ureter were of normal function and architecture. There was no evidence of left renal function in 30 minutes as manifested by intravenous pyelography (fig 1). On vaginal examination the tip of the thermometer could be easily felt in the left vaginal vault.



Figure 2 Intravenous pyelogram 15 minutes taken 10 days after removal of thermometer showing return of function of left kidney

On the following day under general anesthesia cystoscopic examination revealed the thermometer lying obliquely in the bladder with one end entering the left ureteral orifice and the other end pressed tightly against the tight lateral bladder wall. At least one half of the thermometer extended into the ureter. The thermometer was removed by pulling the distal end into the urethra and the pressure exerted

that it was due to the content of diet. He had not noticed blood in his stools. He was reoperated in September 1953 and with the new diet his bowel moved once a day and his weight increased to 145 pounds.



Figure 2 (a) Port of operation of large bowel. Large tumor mass protruding from the large bowel. The large bowel is in the background.

Six months prior to diagnosis he began to have two to three normal movements per day and noticed a gradual weight loss to 130 pounds. At that time he received a letter from his brother, physician, who recommended that he be examined for possible polypoid colitis because his brother had recently undergone a bowel resection for this condition.

The past history and social history were negative. The family history revealed that his mother died at 43 years of age of carcinoma of the large bowel. His sister, 33, had an ileostomy following bowel resection for multiple polyps, and a brother, 23, has had the same. Of three other siblings, one showed normal findings at examination, the second showed adenomatous polyps, and the patient had no knowledge of the condition of the third. His 3-year-old son was symptomatic and was not examined.

Findings of a physical examination were negative except that on digital examination of the rectum the tip of the examining finger descended granular masses.

Results of a complete blood count, a urinalysis, and a serologic test were normal. Examination of stool specimens were negative for occult blood. The roentgenogram of the chest was negative. A barium

enema revealed numerous polyps throughout the entire length of the colon. A sigmoidoscope was passed to 23 cm. and 60 to 80 small polyps were visible throughout the large bowel. On 18 February, under general anesthesia, a total colectomy and resection of the distal ileum was performed. Eleven centimeters of rectum was left and an end to end ileoproctostomy was performed using two layers of sutures.

Upon opening the specimen the entire colon was studded with polyps so numerous that in some areas they tended to merge. There was no evidence of malignancy in the specimen submitted and there were no polyps in the ileum.

Postoperatively the patient did very well with adequate maintenance of fluid balance and a minimal amount of abdominal distention. Three days postoperatively he had a liquid bowel movement with some blood but this was not alarming. The Miller Abbott tube was removed on the fourth postoperative day and he began to have as many as seven soft semisolid bowel movements a day. Three weeks later he was having three formed bowel movements at night and four during the day and had begun to show some gain in weight.

Four weeks after operation a sigmoidoscope was passed for the first time and at the 11 cm. mark the suture line was found intact. Ten polyps distal to the suture line in the rectum were fulgurated. One week later 15 more polyps were fulgurated. After a 2 week period all the remaining polyps were fulgurated leaving a normal appearing mucous membrane and he was discharged from the hospital. Following each of these fulgurations there was some diarrhea but it rapidly subsided. The patient was instructed to return at 3 to 6-month intervals for follow up sigmoidoscopic examination at which time any polyps that may have developed will be biopsied and fulgurated. If any malignancy is found it will be a simple matter to remove the 11 cm. of rectum from below.

The patient is well satisfied with this procedure especially because he has a brother and sister with ileostomies and can compare his condition with theirs.

ETIOLOGY

It is now a widely accepted fact that familial polyposis is due to a genetic change in a normal, growing cell. Once the mutation has occurred the trait is transmitted by either sex from one generation to the next as a mendelian dominant. When one ancestor has this dominant characteristic it is then transmitted down the family tree with every generation affected. McCarty has further proved that the entity occurs in all national groups and that there is no racial predisposition.

SEX AGE AND INCIDENCE

In a series of 93 patients published by Mayo and associates¹¹ no definite sex predominance was noted nor was there any definite

dance of a sex linked characteristic. In true familial polyposis the fact that the disease is hereditary but not congenital is evident in that the symptoms are rarely seen before puberty and the polyps are not found until puberty. In 1952 Schaffer reviewed the literature and found that up until 1928 Hüllsiek⁴ had found 178 cases of polyposis coli with a proved familial history. In addition Schaffer was able to find a total of 107 cases after 1928 including four of his own. This makes a total of 235 cases of proved familial polyposis coli up to 1952. This gives one the impression that the entity is a rare one. However we do not believe that this is true but rather that there are many cases that have not been published because the would be author has thought that the lesion is an all too common entity. We do not believe that familial polyposis coli is a rarity but a rather uncommon lesion and that more cases would be found if a more adequate family history were taken in every case of adenomatous polyps of the large bowel. The average age of onset in Schaffer's patients was 28.9 years and 39 percent of his patients had carcinoma of the large bowel by the time the disease was discovered.

SYMPTOMS AND DIAGNOSIS

The onset of the disease is insidious often rectal bleeding is regarded by the patient as evidence of hemorrhoids and no further thought is given to the matter until symptoms of malignant change appear. Early there is crampy abdominal pain with occasional loosening of bowel movements due probably to hypersecretion and hypermobility. Shortly thereafter mucus and blood are seen. The stools classically have blood over the surface rather than mixed throughout. This is supposedly a classical sign but because one frequently must question the reliability and credibility of the patient little value can be placed upon it.

The presumptive diagnosis is based upon the history and rectal examination. The latter will frequently disclose the rectal mass. Confirmatory diagnosis is based upon proctosigmoidoscopic examination and barium enema.

TREATMENT

The treatment of multiple polyposis recommended in this article is total colectomy including about 5 cm. of ileum followed by an ileoproctostomy. This procedure is done in one stage following bowel preparation with 0.5 gram of sulfaguanidine 4 times a day for 5 days and 1 gram of neomycin sulfate every 4 to 6 hours for 2 days prior to operation. After 1 month all of the polyps in the remaining rectal area are fulgurated the patient is followed at 3 to 6 month intervals by proctoscopic examination and further fulguration is done as indicated. This procedure is far superior to ileostomy with its many inherent difficulties and to pull

through procedures. If the remaining large bowel becomes over run with polyps, large areas of the mucosa can be excised without difficulty. Not only must the patient be treated and followed adequately but all members of his family should be thoroughly examined, treated if necessary, and followed for the rest of their lives.

Many advocate a Miles' operation and ileostomy, either abdominal or the perineal type, so-called pull through procedure. We consider this a rather radical procedure unless demanded by the condition of the distal rectum. There are only two clear-cut indications for such a procedure: (1) evidence of malignancy in the rectosigmoid area, and (2) total involvement of the remaining rectal mucosa by polyps. To further elaborate on the latter indication, if there is no normal mucosa between the polyps, the rectosigmoid area should be removed with the balance of the large bowel, and an ileostomy performed.

With an ileoproctostomy the portion of intestine remaining is able to compensate, and electrolyte and fluid balance is maintained. With an ileostomy, this is achieved with difficulty and, in addition, the caustic effect of small bowel contents upon the skin is well known. Therefore, an ileoproctostomy with preservation of the lower rectum and sphincter is preferred to an ileostomy.

PROGNOSIS

It is a well substantiated fact that adenomata of the large bowel predispose to carcinoma. Martin¹⁴ stated that any patient who has polyps of the colon or rectum would probably develop carcinoma in 10 years, if he lived. The incidence of carcinoma in multiple polyposis statistically varies between 34.6 percent, as reported by Hulsiek and 82.8 percent, as reported by Borgen.¹⁵ Estes¹⁶ stated that the potential incidence of cancer following multiple polyposis should be considered 100 percent. Bernstein¹⁷ stated that from the accumulated evidence it is quite certain, therefore, that the burden of proof is upon anyone who wishes to prove that colonic or rectal polyps will not, if left untreated, undergo malignant degeneration.

In treated patients, following ileoproctostomy, regularity of bowel habit is quickly reestablished. In 6 to 12 months following dietary restrictions, the patients are usually able to tolerate a full diet, so that within 1 year they are able to live a full life.

Statistically, we have little to state concerning the follow up of familial polyposis after operation, because so few cases have been reported. It has only been in the past 5 to 10 years that the dangers of large bowel surgery have been controlled. This is largely due to the development of antibiotics. Adequate follow up

of the patients who have been operated on in the past 5 to 10 years should reveal what the results of such treatment will be. However, it is believed that complete removal of the colon, periodic follow up of the remaining distal rectum and fulguration of any polyps that may develop offer a safe procedure which is far more satisfactory to the patient than an ileostomy. Adequate removal is considered to be that which leaves no more than 12 cm of rectum because of the technical difficulty in observing and treating lesions higher than this.

At the risk of repetition it again must be emphasized that the patient and his family are never free from periodic observation. If the patient co-operates with his physician there is no reason why he may not attain a full life span and remain symptom free and comfortable.

SUMMARY

Polyposis of the large intestine may be classified either as adult (acquired) or as adolescent (congenital disseminated) types. Two cases presented herein illustrate the latter hereditary familial entity as they occur in patients with typical positive family histories. From a review of the literature it appears that familial polyposis coli is uncommon although not rare and more cases would be found if a more adequate family history were taken in every case of adenomatous polyps of the large bowel.

The treatment recommended for benign polyposis is total colectomy including about 5 cm of ileum followed by ileoproctostomy. The patient is then re-examined at regular intervals for the rest of his life at which times new polyps if they occur are fulgurated. This procedure is more satisfactory to the patient than the more radical abdominoperineal resection and ileostomy.

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THE PATIENT'S EXPECTATIONS

The average patient appears to expect one of four things from his doctor (1) some form of medicine (2) advice or guidance in connection with a particular action or event going on at the time he is attending (3) support (usually against some member of the family) in some particular action or (4) a letter to see a specialist. In addition all want to be told what is the matter and of course to be reassured that the condition is not serious.

Yet at the end of the first consultation most are content to go away without any of these things if they have an appointment to come again. Despite the usual cry "The patient expects a bottle of medicine" I have found that if he is given ample time and the opportunity to talk fully and is thoroughly examined before being told it is necessary to seek the cause of his symptoms by means of further interviews he is happy to accept this—and there is seldom any larger demand for medicine. Similarly though it is said that the public has become "hospital conscious" or "specialist minded" I find that most patients who ask for a letter to see a specialist will agree to attend for further discussion of their troubles once they have been encouraged to talk freely.

—PHILIP HOPKINS M R C S L R C P
in *Medical World*
pp 20-21 July 1955

Traumatic Aneurysm of the Thoracic Aorta

PAUL F WARE C pta MC USAR
RICHARD H ADLER C pt MC USA
CLINTON S LYTER C I I MC USA

RECENTLY traumatic thoracic aortic aneurysm or rupture has been diagnosed more frequently during life. The increasing speed and accident rate with modern transportation undoubtedly accounts for the rising prevalence of traumatic thoracic injuries. Scattered case reports now appearing in the literature raise many pertinent points regarding their pathogenesis, diagnosis and treatment. Therefore a complete understanding of the pathogenesis of such injuries is essential for an accurate diagnosis during life in order to permit definitive treatment.

PATHOGENESIS

Aortic trauma may be due to either penetrating or nonpenetrating injury. Nonpenetrating injury is caused usually by blunt trauma such as steering wheel or other crush injuries. The aorta is readily susceptible to the peculiar effects of rapid deceleration alone. Closed chest trauma involving sudden deceleration as in car or jeep accidents, parachute jumps, falls from a height and airplane crashes accounts for the great majority of thoracic aortic injuries. Hass reported on the pathologic changes found in victims of aircraft accidents and emphasized the stresses placed on unevenly decelerating body organs. The aorta acts like a solid viscus because of its column of blood and tends to decelerate slowly. In addition the rate of deceleration is retarded at certain anatomic points because the transverse aortic arch is relatively mobile and hangs suspended in the thorax from the great vessels. The aortic arch is comparatively anchored at its left ventricular origin and at its junction with the descending aorta near the insertion of the ligamentum arteriosum. The descending aorta is fixed to a lesser extent by the intercostal arteries. In Strassman's series of 79 cases of traumatic aortic rupture the sites of rupture in order of frequency were the first portion of the descending aorta, the proximal aorta just above the aortic cusps and the descending aorta between the isthmus and the diaphragmatic hiatus. Closed chest trauma from most causes basically involves unequal deceleration subjecting the aorta to stretching, torsion and tearing especially at the relatively fixed points.

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The type of aortic injury resulting from such forces is variable. If the stress imposed is very severe the mobile aortic isthmus may be torn completely apart at either end with sudden, fatal hemorrhage. A linear tear of the intima may heal spontaneously, give rise to a dissecting aneurysm, or progress to further rupture of the media and form a false aneurysmal sac. A force sufficient to tear both intima and media may lead to progressive dissection and stretching of the adventitial layer with formation of a false aneurysm. The torn intima and media may retract a considerable distance leaving a false fibrous aortic wall or sac as the lesion stabilizes. The laceration is usually transverse and occurs most commonly near the ligamentum arteriosum. If an aneurysm is formed, it is usually posterolateral in position and grossly resembles a saccular type of aneurysm. This appearance, however, is deceptive and there are certain fundamental differences between a traumatic aneurysm and a classical syphilitic saccular aneurysm which have a practical bearing on surgical treatment. Fractures of the bony thorax, injuries of the heart, lung, and extrathoracic organs may be associated with the aortic lesion.

CLINICAL COURSE

The clinical course of a patient with aortic trauma may pursue one of several pathways. Immediate death from hemorrhage may occur from complete laceration while partial laceration may result in a localized unsuspected aneurysm discovered on routine chest examination. Partial laceration results in variable degrees of localization of the extravasating blood. Temporary localization, by a thin adventitial layer, the lung, or mediastinal structures, may occur with exsanguinating hemorrhage hours or days later, or the extravasated blood may become firmly localized forming a false aneurysm. This latter group of patients must be diagnosed accurately to prevent a fatal outcome.

DIAGNOSIS

Diagnosis is relatively simple if clinical suspicion is high. The patient presenting a history of thoracic trauma requires careful observation both clinically and radiologically. Serial roentgenograms may reveal progressive mediastinal widening, increased aortic density or "lacyring" due to adventitial dissection or an irregular mediastinal shadow due to extravasating blood. There may also be associated lung injury with the findings of hemopneumothorax.

PHYSIOLOGIC CONSIDERATIONS

The period of aortic occlusion tolerated by human patients without neurologic damage is variable and depends on individual collateral circulation. Patients with coarctation of the aorta usually possess excellent collateral circulation and safely toler

ate aortic occlusion for long periods. Even these patients however may not have the aorta occluded with impunity if critical collaterals are sacrificed. The patients reported by Beattie and co-workers and Bing and associates suffered paralysis after the subclavian artery was turned down into the aorta below the area of occlusion.

Two methods used singly or in combination are available to protect the heart and distal organs from the untoward effects of aortic cross clamping: (1) an artificial collateral circulation supplied by a shunt and (2) hypothermia to reduce the workload of the heart and diminish the tissue oxygen requirements.

A practical external shunt was devised by Clatworthy and Varco in 1950. Blood was shunted around an occluded aortic area through a siliconized polyethylene tube. This shunt prevented the mechanical shock observed in dogs undergoing aortic cross clamping without such protection. Schafer and associates used this method in both dogs and humans to replace resected aortic segments with a new graft. Izant and associates used double flanged stainless steel tubes connected as an external shunt. Stranahan and associates shunted blood through Tygon tubing with siliconized glass joints. Mahornor and Spencer used the graft which is to replace the excised aortic segment as the shunt itself.

Numerous studies of the physiologic effects of aortic cross clamping have been carried out. Pado demonstrated that collateral circulation prevents proximal hypertension when the aortic arch is first partially then completely constricted. Van Harreveld and associates in 1949 demonstrated in experiments that sudden complete aortic occlusion just above the renal artery is without effect whereas compression above the celiac axis or above the diaphragm causes an immediate rise in arterial pressure as does occlusion of still more central aortic regions. Reduction of the thoracic aortic lumen of over 45 percent is required before arterial pressures in the aorta or femoral artery are affected. The studies of Hubay and associates emphasize the importance of the shunt lumen approximating the cross sectional areas of the bypassed vessel to minimize the physiologic alterations. Other studies revealed that small long or multiple shunts offering increased resistance may not serve as adequate collateral channels. Schafer and co-workers using multiple polyethylene shunts found partial occlusion of the inferior vena cava also necessary to prevent overloading the left ventricle.

The basic physiologic studies of hypothermia initiated by Bickel and associates have focused attention on the use of body cooling to minimize the problems associated with aortic

cross clamping Owen and co-workers²¹ recently concluded from a series of 16 hypothermic (23 to 26 C) dogs that thoracic aortic cross clamping for periods up to 2 hours during hypothermia was safe Pontius and associates,²² in cross clamping the aorta, found only a slight reduction in over all mortality in hypothermic dogs but demonstrated no evidence of paraplegia in them, while 65 percent of the control normal thermic animals developed paraplegia Their study suggests that hypothermia may avoid ischemic changes below the area of aortic occlusion, but offers little or no protection against the immediate cardiovascular effects

CASE REPORT

The patient a 19 year old soldier was transferred to this hospital on 19 November 1954 with a referring diagnosis of traumatic aneurysm of the thoracic aorta He had been involved in an automobile accident on 12 September and had been hospitalized elsewhere because of multiple rib fractures on the left associated with a left hemopneumothorax which had been managed satisfactorily by aspirations He was discharged after 3 weeks but because of dyspnea on mild exertion easy fatigue palpitation and occasional aching on the left side of the chest he was unable to perform duty and was transferred to this hospital for evaluation

The patient was tall and thin and in no acute distress All peripheral pulses and blood pressures were normal A grade II systolic murmur was heard on both sides of the spine posteriorly but was more marked on the left Electrocardiographic findings were within normal limits A roentgenogram and fluoroscopy revealed a pulsatile paramediastinal mass lying posterolaterally in the left side of the chest in intimate relation with the proximal descending aorta An angiocardigram did not reveal any contrast material entering the mass

The development of the aortic aneurysm can be followed by review of the roentgenograms made during the initial 2 week posttraumatic period (figs 1-4) On serial roentgenograms the aneurysm appeared slightly larger (fig 5)

The use of hypothermia and an external aortic shunt were believed to offer maximal protection during the contemplated period of aortic cross clamping Accordingly on 29 December anesthesia was induced and under hypothermia the aneurysm was excised and replaced by a homologous aortic graft The patient's temperature was maintained between 80 and 82 F throughout the operative procedure by an under lying cold water rubber mattress after hypothermia was induced by immersion in an ice tub Adequate exposure was obtained through the bed of the left fourth rib with shingling of the third fifth and sixth ribs The aneurysmal mass was found to arise about 15 cm distal to the left subclavian artery and presented in a posterolateral position There was tremendous fibrotic reaction about the aneurysm the left



Figur 1 R ndg gr m f 12 S pt mbe 1954 for g m dia tinal wide i g and ntus d i ft l g Figur 2 Ext nsu left hem thorax us d m nst i d 13 S pt mbe 1954

lu g nd the medi st nal st etur fr m previ u media tinal a d pleural bleed ng Th nat m c ele v ge planes we e e se t lly oblit erated and the trem ly ndur t d tissues j lded in me rea only to harp kn f d sset on Fr t the left subel vi n a tery and aortic arch pro imal to th neury m were d sected f ee a d enured by umb li al tapes A part ally bliterated p tent ductus wa dived by the meth d of Gros A ect on of orta d stal to the n urysm w s t isol ted nd l ken s encurel d with t pe Th subelavi n a tery wa occluded and a hete l oous (dog) neri l sl eve was na t mosed to the id of th ubel v n att ry A iml het rol gous arte i l sleeve wa n stomosed to the dist l orta A eur ed Port cl mp allow d s tur of she d st l s rra wthout oculus n Th heter ologous grafts were th n connect d by fl nged s licon z d polythene hunt tub (figs 6 nd 7) which h d comb n d inte nal di met t of 7 mm Port cl mps were then placed on normal orta prox m l and d l tal to the neury m a d the prox m l rra tra ect d j st above th neury sm The t tens f bto is made xis on of the n urysm hazardous because of the m m t nv lvement of th left tral w ll the left p lmonary art y the left m in bronchu es phagus and in fet or pulm nary ve n A 3 cm rea of esophageal museul tis nc pot ted in f brous ct o was in d erently re o ed during th ex t ive di section n cessay to r move the aneurysm leav ng a l mm p for tion n the derly g m cos This pen g w s sutured and th denuded esophagu covered by d j cent pleura a d lu g After exc sing the neury sm the two ends of no m l aorta wer bt dg d by a 16-cm ly philzed homolo o ortic pr ft Ana tomos was p r fo med by sh rt le gths of conti uous rt ng N 00000 silk m tr ess sutut interspaced wthngle t rrupted everting m rtr ss s tures



Figure 3 The roentgenogram made on 23 September 1954 reveals improvement of the left hemothorax following repeated thoracenteses. Figure 4 Presence of some loculated fluid subsidence of the mediastinal reaction and early aneurysmal dilatation are noted in this roentgenogram of 1 October 1954



Figure 5 The opening of 26 N mbe 1954. The left side of the chest is shown in the classic position.

of the membrane. Even though the normal host aorta had considerable dilatation of the thoracic aorta. After the proximal clamping was completely performed, a small opening on the posterior diaphragm of the aortotomy was required. Addition of a tube and a piece of oxidized cellulose for hemostasis. Following establishment of good blood flow through the homologous aortic graft, the clamps were removed by ligating and transecting the left subclavian artery and esecturing the distal aortic opening within the curve of a posterior clamp. The percutaneous procedure was 10 hours long. The patient functioned well throughout the 3-hour period of aortic occlusion and there was no evidence at any time of cerebral embolism. The patient received a total of 21 pints of blood.

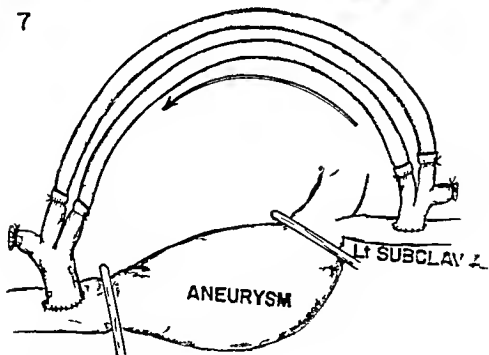


Fig. 6. Photograph taken during the operation showing the upper edge of the aneurysm. The relationship of an aneurysm to the subclavian artery is shown.

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At autopsy the esophageal perforation causing an extensive mediastinitis and pleuritis was confirmed (fig 9) The aortic graft and suture lines (fig 10) were intact except for one small area of leakage in the proximal suture line presumably the result of the surrounding infection Postmortem findings otherwise were not remarkable

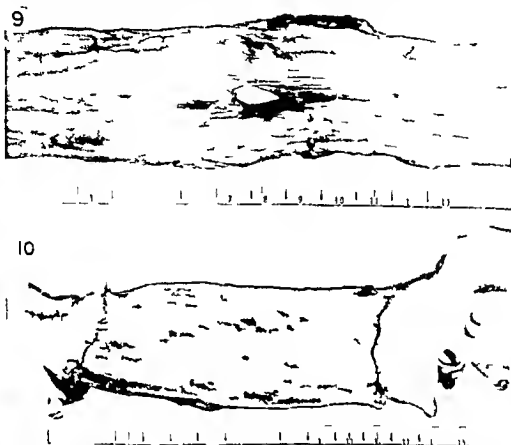


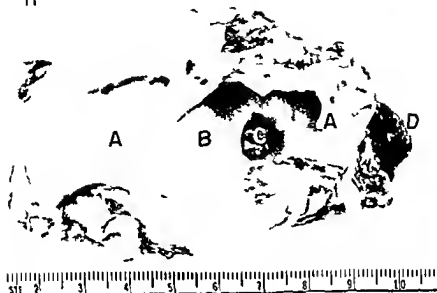
Figure 9 Postmortem m cosal view of esophageal perforat on Figure 10 Post mortem photograph of the homologous aortic graft bridg ng normal aortic wall

PATHOLOGY

Few traumatic thoracic aortic aneurysms have been studied carefully pathologically after surgical resection External examination of such an aneurysm at operation may be misleading Study of an open resected specimen, including sac and involved aorta, provides a more complete understanding of the basic underlying lesion A traumatic aortic aneurysm, unlike its syphilitic counterpart is not a sharply localized pathologic defect The lacerated intima and media retract as much as several centimeters with disruption of elastic fibers leaving a defect bridged only by fibrous tissue

The fundamental features of traumatic aortic aneurysm are illustrated in figures 11 through 15 These findings have also been demonstrated by Stryker¹⁴

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Fig 11 Gross view of fusiform aortic aneurysm looking distally into aortic lumen and neurectomy area. Figure 12 Transverse view of gross specimen of aortic aneurysm. (A) Normal aortic wall (B) Fusiform aneurysm of left descending aorta (C) Fusiform aneurysm of right descending aorta (D) Fusiform aneurysm of abdominal aorta.

DISCUSSION

More patients receiving severe closed chest trauma associated with sudden deceleration are being seen and with vigorous treat-

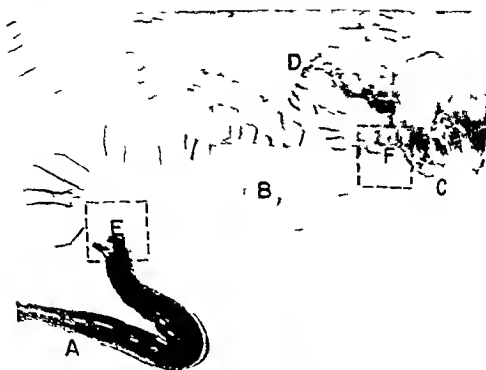


Figure 13 Sagittal section through normal aortic wall fibrous tissue extending into fat sac (See legend for figure 1 for explanation). (E) The end of normal aortic wall with disrupted elastic tissue. (F) Edge of fibrous tissue defect and laminar defect. (See legend for explanation of elastic tissue defect.)

ment are surviving and presenting problems. Such an aneurysm if discovered on chest roentgenograms may perhaps be a harbinger of no untoward signs of progression.

The immediate prognosis for the patient with traumatic thoracic aortic aneurysm is very poor. Indeed, in a series of 63 patients with traumatic thoracic aortic rupture 63 per cent died within 1 hour and all died within 10 days. Knudsen's patient lived 10 days. Rice and his associates' patient lived 7 years. If the patient is stabilized in the first few hours an exploratory thoracotomy should be considered. If a definitive procedure is necessary, but surgery is indicated by the reports of Knudsen and Greer.²

A third group of patients survive for weeks to months except for a localized thoracic

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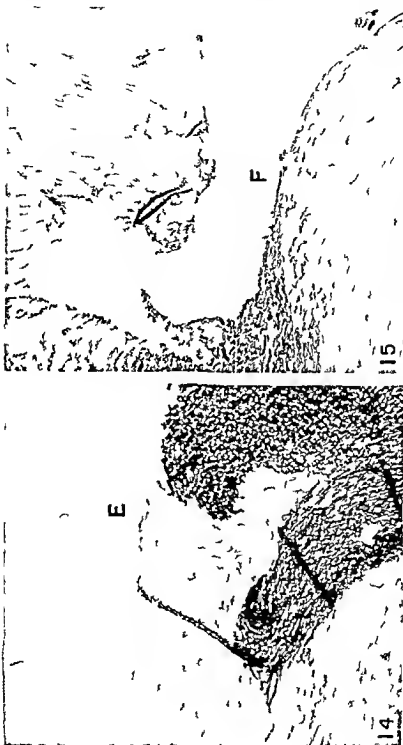


Figure 14 H gb-pou.

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posttraumatic aneurysm as identical with a true saccular small necked aneurysm of syphilitic origin is appealing. Clamping of the base of the sac, with excision of the main aneurysmal mass and suture closure does not require interruption of aortic blood flow. This approach, successful to date, in a posttraumatic aortic aneurysm, has been reported by Bahnson.³ A similar approach was unsuccessful in the case reported by Goyette and associates,⁴ and recurrence of an aneurysm 6 months following a similar procedure has been reported by Cooley and DeBakey.¹⁰ Pathologically, however, as we have seen, there is usually actual rupture and pulling apart of the intima and media with retraction of the layers for a distance of several centimeters. This gap, devoid of elastic fibers, is bridged only by fibrous tissue. These features, peculiar to a posttraumatic aneurysm, may not be appreciated at the time of operation. Clamping, excision, and re-suturing through such fibrous tissue would seem to preclude a long term satisfactory result in a high pressure, vascular channel such as the thoracic aorta. Rather, a definitive procedure involving resection to normal aorta with grafting seems preferable.

Hypothermia with a protecting shunt seems indicated to avoid the inherent hazards of aortic occlusion in these patients. The hypothermia need not be extreme, but may be maintained between 80 and 84 F to minimize myocardial irritability and a potentially difficult resuscitation if ventricular fibrillation should ensue.

The ribs should be spread open slowly to avoid tearing the posterior aspect of the aneurysm where its limiting tissues may be thin and friable. The aneurysm *per se* should be left alone to avoid troublesome oozing and alveolar leaks from the intimately adherent lung. Softened areas in the aneurysm may actually be buttressed by lung parenchyma, and dissection may lead to potentially uncontrollable hemorrhage. Therefore, the aorta is first exposed proximal to the origin of the aneurysm. The previous mediastinal and pleural bleeding leaves a residual fibrosis rendering all dissection hazardous until one has achieved satisfactory control of the aorta above and below the aneurysm. An external shunt to bypass the aneurysm is readily established without even momentary interruption of aortic blood flow. A heterologous arterial sleeve is sutured in position in the distal aorta and also in the subclavian artery. A siliconized, polyethylene, flanged tube may be simply tied into these arterial cuffs. The arterial sleeves have the advantage of mobility and permit the shunt to be moved out of the operative field. Ideally, the size of the shunt under normothermic conditions should approximate the estimated cross sectional area of the thoracic aorta. Practically from the studies of Gupta and Wiggers,¹¹ it would seem that a shunt half this size would be adequate. The decreased

cardiac output and lowered oxygen requirements of tissue cells under hypothermia add a further margin of safety. The size of lumen of the shunt used in our patient was critical and undoubtedly hypothermia contributed to the safe aortic occlusion of over 3 hours duration.

Once the shunt is functioning satisfactorily, the aorta may be cross clamped with impunity. The entire aneurysm should now be removed to avoid late slough and abscess formation as reported by Lam and Aram. The surgical error in our patient resulted from inability to find any cleavage plane between the medial wall of the aneurysm and certain mediastinal structures. Indeed, too extensive a dissection may lead to impairment of the esophageal blood supply or injure the esophagus and other contiguous structures. A safer approach would be to open the aneurysm longitudinally on its lateral aspect and with a finger in the lumen excise the intima and media on its medial aspect under direct vision leaving the adherent adventitia and mediastinal tissue reaction intact over vital mediastinal structures. Thus potential injury to the esophagus, left main bronchus, pulmonary artery, inferior pulmonary vein and left auricular wall would be minimized. An indwelling gastric tube would be an additional precautionary measure.

The traumatized aorta with its accompanying aneurysm is excised to grossly normal aortic wall proximally and distally. The intervening defect may be bridged by a freeze dried aortic graft or a suitably fashioned prosthesis of one of the newer nylon type synthetic fabrics. After completion of the anastomosis and restoration of aortic blood flow, the distal aorta is reanastomosed and the subclavian artery may be reconstituted or ligated and transected. An additional point perhaps related to hypothermic anesthesia deserves mention. Due to our present interest in fibrinolysis in thoracic surgical patients, routine investigative blood specimens were drawn for fibrinogen levels. Intense fibrinolytic activity was noted when the patient was placed in the ice water tub and again later when blood replacement fell behind momentarily. The fibrinolytic activity spontaneously subsided in each instance but excessive fibrinolysis should be considered if unusual oozing occurs because intravenous fibrinogen fraction may restore a normal clotting mechanism.

SUMMARY

The incidence of traumatic thoracic aortic aneurysm is increasing. The lesion may be caused by closed chest trauma and rapid body deceleration. Early accurate diagnosis is essential to permit definitive treatment.

The reported case illustrates the development of the lesion radiographically. The basic pathologic changes are documented

and their relation to the choice of surgical therapy discussed. Complete resection of the aneurysm to normal aorta would seem to ensure the best long term result.

In the light of present knowledge, resection of a traumatic aneurysm requires an external shunt and hypothermia to afford maximum protection against deleterious cardiodynamic effects and distal ischemic changes during aortic occlusion.

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A MESSAGE FROM THE A M A

This is the second part of a report on the results of a continuing opinion survey of physicians released from active military service. The first part appeared in the October issue of the *Armed Forces Medical Journal*. The summary covers the reporting period from 1 July to 31 December 1954, during which time the Council on National Defense of the American Medical Association distributed 2,373 questionnaires. A total of 1,500 forms were completed and returned for tabulation.

Training received while in service Approximately two thirds of the 1,500 responding physicians replied to this question. There were 412 in the Army, 276 in the Navy, and 251 in the Air Force who reported that they received additional training or experience in service schools. The Medical Field Service School accounted for the largest number, while the School of Aviation Medicine and the Amphibious Forces Training School were next in order of attendance.

Evaluation of military medical training A big majority of the responding physicians felt that all important features of military medical training had been satisfactorily covered. Satisfactory responses were 83.6 percent for the Air Force, 77 percent for the Army, and 70.6 percent for the Navy. Insufficient training in military customs and regulations accounted for the largest number in the Army who were not satisfied with the training programs while for the Navy and Air Force it was insufficient training in basic orientation and indoctrination.

Physicians' evaluation of assignment A large majority of the physicians indicated they were properly assigned. A less decisive majority in the Army and Air Force responded favorably to the question as to whether they were properly rotated. For the Air Force 82.7 percent indicated a proper assignment and 77.3 percent were satisfied with their assignment. For the Army 77.1 percent indicated proper assignment and 73.6 percent were satisfied, while in the Navy 66.7 percent indicated a proper assignment and 68.4 percent were satisfied.

Physicians' evaluation of staffing conditions This multiple-answer question requested an opinion as to staffing conditions of nurses, enlisted medical personnel, dentists, physicians, and

From the Council on National Defense of the American Medical Association
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 —Editor

others at the installation where service was performed by the responding physician. For all three branches of service the largest number of responses indicated adequate staffing. By services 389 Army responses indicated overstaffing 434 understaffing and 1 136 adequate staffing. Among the Navy replies 570 indicated overstaffing 466 understaffing, and 1 334 adequate staffing. In the Air Force 284 indicated overstaffing 413 understaffing and 684 adequate staffing. By groups physician overstaffing was greater in the Army and Navy while in the Air Force physicians were on a par with dentists. The largest understaffed group in the Army and Air Force was nurses. In the Navy dentists led nurses by a small percent in understaffing.

Medical duties performed by others. A total of 1 380 physicians answered this question. The replies showed that 46.1 percent thought that their duties could not have been performed adequately by other personnel while 53.9 percent felt their duties could have been adequately performed by other personnel. More than 50 percent of the physicians who indicated a possible transfer of their duties to others considered that civilian physicians could adequately provide the medical services.

Types of patients treated. One of the questions was designed to determine the percentage of time devoted by physicians to military personnel dependents of military personnel administrative duties et cetera both at domestic and overseas stations. Approximately 50 percent of the responding physicians said they devoted one half or more of their time to military personnel both at domestic and overseas stations. One half or more of the time allotted to dependents of military personnel at domestic stations was indicated by 28.2 percent of the replying physicians and at overseas stations by 34.8 percent.

Types of nonmilitary medical care. The type of medical care most frequently performed by medical officers for nonmilitary persons was outpatient care. For the Army other specialty services was second in order of frequency with surgery third. For the Navy and Air Force obstetrics and gynecology was second with other specialty services third in order for the Navy and pediatrics third for the Air Force.

Physicians who would voluntarily remain in service. In response to the question relative to military service beyond the obligated tour of duty 373 physicians indicated they would not be willing to stay in military service for more than their obligated period under any circumstances. A total of 816 physicians indicated they would serve an additional period under certain conditions.

PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army, Navy, and Air Force have recently received *permanent* promotions to the rank indicated

Medical Corps

How d G Abbott Capt USA
F e M Adams Capt USA
E I A d n Capt USA
R y m n d H Bish p Jr Capt USA
R b t J Brady Maj USA
Jame L B Capt USA
Cla d M C pp Capt USA
D d S Cooper Capt USA
E t a G C p Capt USA
Dana D Cns Capt USA
St pb n W Ca e ck Capt USA
Mcha l R F r il Capt USA
J me P G g Capt USA
Ea l S G id Capt USA
Alphons C G m Capt USA
E r l W Gorby Capt USA
Hom H H na Capt USA

R b t F Hor ma Maj USA
W l l m J J ffurs Capt USA
Edw rd S ko w nski Capt USA
Arta P La Capt USA
Lloyd B McCabe Capt USA
E g ne P McK ow Capt USA
St phe Mourat M J USA
R bert W N dl g t Capt USA
Fra cas W P drotty J Capt USA
J m W Rans C pt USA
J b W Schult Capt USA
P l E S b t Capt USA
G g M St w t Capt USA
J m A S k Capt USA
P ul A Th ms J Capt USA
Robert C W e Capt USA

Dental Corps

George Gell Jr Capt USA
Cla enc W Gill ger C l USAF
Cha l s M H Capt USA
Robe t J Milard C pt USA
R y m n d H O t r h l t z Capt USA
Th od t J P t C l USA
W l l m M R m Lt Col USA

J b F Schmt Capt USA
F d Sch ed Capt USA
D nald E Schw tz Capt USA
Cha l F S m t Capt USA
Georg I U ha Capt USA
Ros W W Capt USA
Hal C W e t Capt USA

Veterinary Corps

W lla l A th y Capt USA
Charl M Ba C pt USAF
Charl N B Capt USAF
Mlt A B rw kl Capt USA
Joh H B ns Capt USA
Rodney S B l l t Capt USA
K th F Burns Maj USA
I land B Ca t Capt USA
I r R Coop t Jr Cap USA
W l t T C l l Lt C l USA
R b t A Crand ll Capt USAF
Fra k J D M i USA
Ha ld M D Maj USA
Dua F Ford Capt USA
Fl M Gatne Capt USA
W lliam S Goch ur Jr Maj USA

Th m P Grff Capt USAF
W lliam V H w l l Capt USAF
Donald C H k Capt USAF
K y W L t z Capt USA
St warr J M C ll Capt USA
Murlin L McG w Capt USAF
R bert R M l l C l USAF
Ma M N ld Capt USAF
Th ma G Nurra J Cap USA
Ge C Ph l p Cap USAF
G lbe t L Rauls Capt USA
W lliam E R l y Capt USA
Cha l E R b ns C l USAF
W lliam W R Capt USA
J me W Sh l l t L USAF
Howard B Sld J Cap USA

Veterinary Corps—Continued

J h L T rry J Cap USAF
 Fra L Th m Cap USA
 J me B Y s Cap USA

R he J Y s Cap USAF
 A l O W ls C I USA

Medical Service Corps

B na d A bel C I USA
 Erw R A h b l d l L USAF
 William W Ba l L USA
 Ca l C Ba k C I USA
 J h W Ba l L USA
 Edg A Blair C I USA
 All n J Blak C I USA
 La G B s l L USA
 Ha ld Bork Cap USA
 William L Bos Cap USA
 Th od E B ne l L USAF
 A be W Bun ma L C I USAF
 Fra A Bucke dg l L USAF
 J m C Burk l L USA
 Franc M Ca Cap USA
 E g sa Cl y l L USAF
 Ma w l l A C k Cap USA
 R ym nd J Cook Cap USAF
 R ha d A C k Cap USA
 E g G C pe C I USA
 R b H C l L USAF
 All R Crow C I USAF
 El E D ma C I USA
 F kla L D J C I USAF
 S H D is M I USA
 J h A D k ns Cap USA
 J h P D l Cap USA
 F d H D ks Cap USA
 Fra k R F ly Cap USAF
 L is H F ba Capt USA
 William L F ma l L USA
 William M G d Maj USA
 Alf ns A G ga l L USA
 Sta ly R Ha k ns l L USA
 Bry O Ha ma Cap USA
 L w L H wk ns l L USA
 R be A H d l L USA
 Fra k H ber J Cap USA
 G y C Hill C I USA
 J m A l l h l L USAF
 Fra L H l ha Cap USAF
 Rufus D Huff Col USA
 H nry A H gg J l L USAF
 Rus l l l J k ns l L USA
 Aa B J hns l L USA
 E O J Cap USA
 L K A b l l Cap USAF
 P l W K ng L C I USAF
 Er T Kr hm L C I USAF
 Cal G Laut be h Cap USA
 Ha land W L y C I USA
 B ram G L b l L USA

H ma l L l Cap USAF
 J k P L Maj USA
 Fra as M Lun L C I USAF
 J m H Ma k C I USA
 E W Mal ne M j USA
 Adria D Maad l Cap USA
 Ca lyl S Ma h k C I USA
 K h L Ma lf Cap USAF
 R y D Marw ll C I USA
 W D M Clur l t L USA
 J ph G M Gl d l L USA
 J m J M l y L C I USAF
 G org H M L l L USAF
 Ma H Mix J l L USAF
 Ralph W Morga Cap USA
 L is H Mus b l Maj USA
 Cal E N w J Cap USA
 W ly R Now ll Cap USAF
 R lph E P s C I USA
 G H P k l L USAF
 E W P C I USA
 E l A P Capt USA
 R be B P y L C I USAF
 C l M P nc C I USA
 R be J Pur ly l L USA
 G ld A R m b l L USA
 A F R bi J Capt USA
 William S Roo y Cap USA
 R ma B R k w k l L USA
 L l Saul Cap USAF
 Edg H Sh Cap USA
 H ns S h k Cap USA
 E T Sh C I USA
 D na S Sta k l L USA
 F d k B S J h Cap USA
 Ha ld S ne Cap USA
 Ad lph ll Sw me Cap USAF
 L T Tyloe Capt USAF
 D l l Th p C I USA
 D na ld L Umph L C I USAF
 Sea ly J W d k pf C I USA
 Edw d S W l ha s J l L USA
 V M Williams J l L USA
 H nry M Woolf Cap USAF
 L J W gh Maj USA
 L na d P Z g low C I USAF
 B lly B Z ll Cap USAF
 William N Z l lma J l L USA

Nurse Corps

Erl T Aycock 1 t Lt USA
 Jane C Bes 1 t Lt USA
 B etty E B chman 1st Lt USA
 Matguc t C. Casey 1 t Lt USA
 Donna M Chr tens 1st Lt USA
 Betty L. Da is 1st Lt USA
 Roma E D L uey 1 t Lt USA
 Mary E Doyl 1st Lt USA
 Vi ann F la d 1st Lt USA
 Mildred C F t. 1st Lt USA
 Shurly M G l o 1 t Lt USA
 Dorothy M Holtz 1 t Lt USA
 Rosemary H ud k 1 t Lt USA
 H l M Ka 1 t Lt USA
 W oda M King 1st Lt USAF
 D r thy M K h 1st Lt USA

Barbara E L e 1st Lt USA
 Sara N L ndy 1 t Lt USA
 Alberta F Maisey 1 t Lt USAF
 Mary F McL 1st Lt USA
 Joan M Polidor 1 t Lt USA
 Kay M Reid 1st Lt USA
 Mr L Rodgers 1 t Lt USA
 Nadi G Samm 1st Lt USA
 Ma y L R Sands, 1st Lt USAF
 R g na H Schiffman, 1 t Lt USA
 Nancy V Smith 1 t Lt USA
 Mary B T 1 t Lt USA
 Franc O V ndi r 1st Lt USA
 Shurley G W ste 1st Lt USA
 Hel a Wells 1st Lt USAF

Women s Medical Specialist Corps

Ma ly J And so 1 t Lt USA
 H l E Cr ckshank 1st Lt USA
 Dor thy M K n s 1st Lt USA
 Eliz beth L Lambertso 1 t Lt USA
 D orthy MacFoege 1 t Lt USA

Harr t J A Mck al y 1 t Lt USA
 Ol J P tt 1 t Lt USAF
 Cora D Rey ld 1st Lt USA
 P r a W k feld 1 t Lt USA
 Mary F W e th ve 1 t Lt USA

DEATHS

PELLIZZARI Frank Joseph Lieutenant (DC) USN Sullivan Ind U S Naval Construction Battalion Cent Port Hueneme Calif graduated in 1952 from the St Louis University School of Dentistry St Louis Mo commissioned a lieutenant (jg) 13 October 1952 died 4 September 1955 age 30 in Santa Monica Calif of injuries received in an automobile accident

book a few of which are no vascular occlusion found at autopsy in two thirds of the instance of cerebral infarcts (page 26) the value of vitamin B complex in clearing persistent confusion in elderly patients that erroneously was believed to have been senile psychosis or cerebral arteriosclerosis (page 53) the use of sodium nitroprusside in the treatment of patients with acute hypertensive encephalopathy (page 63) the many factors in differentiating between cerebral thrombosis and hemorrhage (pages 82-98) in China hypertensive as minimal a 150/90 mm Hg able to produce severe vascular damage (page 120) and the value of serial electroencephalographic studies including activated records (page 124) —**RICHARD P. JOHNSON** *C1 MC USA*

PAIN Its Method and Nursing Illustrated by James C. White, M.D.
F.A.C.S. and William H. Swartz, M.D. F.A.C.S. with illustrations by Stanley G. Webb, M.D. and F. J. B. M.D. 736 pages, 134 figures, 54 tables. Chapter 1. C. Th. m. P. b. l. h. Sp. g. f. l. d. ill.
1955 P \$17.50

This book is well organized with a helpful table of contents, authors' index, subject index, and an extremely valuable bibliography. Statistics related were accumulated over 25 years, a period from early history at Massachusetts General Hospital, Boston, the Queen Elizabeth Hospital, Birmingham, England, the New England Center Hospital, Boston, the U.S. Naval Hospital, Chelsea, Mass., and St. Albans, N.Y., and the Cushing Veterans Administration Hospital at Framingham, Mass.

The first part deals with fundamental aspects of the anatomy, physiology, and psychology of pain. The second section on surgical techniques gives a complete working bibliography of the various techniques for relieving pain. The third part deals with the various types of pain and the need for a systematic approach to the treatment of pain. The author emphasizes the need for a systematic approach to the treatment of pain and the need for a systematic approach to the treatment of pain.

The treatment of specific types of pain is discussed in the third section, which includes practically all types of pain and attempted treatment techniques individually discussed. The author's personal experience are illustrated with typical cases.

This book is a masterful record of persistent searching for the clinical truth in answer to the problem of pain. It contains personal communications from many outstanding neurosurgeons all over the world who are known personally to the author. These are combined beautifully with a thorough survey of the literature. The complete honesty of the author in dealing with such difficult and perplexing problems is refreshing.

It is a pleasure to read with a feeling that here is a volume in this series which is a basic line and collection of truths from which to build better understanding of destructive pain.

—**FRANK B. CLARE** *Comd (MC) USN*

ANTIBIOTICS ANNUAL 1954 1955 Proceedings of the Second Annual Symposium on Antibiotics edited by *Henry Welch* Ph D and *Felix Marti* M D Second Annual Symposium on Antibiotics Chairman *Henry Welch* Ph D Sponsored by U S Department of Health Education and Welfare Food and Drug Administration Division of Antibiotics In Collaboration with the *Journal of Antibiotics & Chemotherapy* October 25 29 1954 Washington D C 1154 pages including graphs tables and colored illustrations Medical Encyclopedia Inc New York N Y 1955 Price \$10

The present Annual like the previous volume is a compendium of the reports presented at the Second Antibiotic Symposium. The table of contents strongly reflects the stated purpose of the Symposium which was to bring together clinicians chemists and bacteriologists to study antibiotics from different viewpoints. The volume is devoted entirely to recent scientific information on the pharmacology and therapeutics of an ever increasing number of antimicrobial agents and is not in any sense a handbook for the clinical application of antibiotics.

Of particular interest is the extraordinary amount of basic and developmental information contained in this volume. Furthermore clinical and laboratory investigation has suggested additional applications for antibiotics. Thus some of the newer antibiotics have been found to be effective antifungal agents and one has been shown to stimulate growth in children with simple growth failure. Finally the tumor suppressing activity shown by certain antibiotics suggests a rather different approach to the treatment of neoplasms and a wider meaning for the term "antibiosis".

The discovery of new antibiotics has kept pace with this developmental progress. Thus 14 new substances with antimicrobial activity are described and preliminary appraisals of their potential effectiveness are recorded.

The editors faced a formidable task in editing the 172 reports that constitute the text. As a result the style of writing and completeness of bibliography vary with the individual author and the subject index is incomplete. Nevertheless the editors are to be commended for the rapidity with which this volume was published. It is an excellent interim summary of the varied aspects of antibiotic research and therefore of great value to the clinical and laboratory investigator who is primarily concerned with the study of antibiotics.

—EDWARD L. BUESCHER *May MC USA*

NEUROLOGY Volumes I II and III by *S. A. Kanner Wilson* M A M D D Sc (Edin) F R C P Edited by *A. N. Bruce* F R C P (Edin) D Sc (Edin) M D F R S (Edin) Lt Col R A M C 2d edition 2060 page 279 illustrations The Williams and Wilkins Co Baltimore Md 1955 Price \$37.50 per set of the three volumes

The republication of this reference work has been awaited eagerly by most students of neurology. It is presented in three volumes instead of the previous two making for easier handling. Fortunately the format

adequate format has been retained. Although a work of this kind almost definitely revision without a complete rewriting the original text represented an era in classic descriptive essay at its best so that complete rewriting would have destroyed its classic and historic flavor. The editor has avoided this and has done exceedingly well in his revision under the limitations imposed.

A chapter by Russell Brain on aphasia, apraxia and agnosia is distinct addition. There have been rapid strides in certain neurologic areas catalyzed by the development of neurosurgery so that today a neurologic work of any magnitude must needs be outmoded to a considerable degree by the time it is published. The more recent procedural advances such as electroencephalography, arteriography and pneumonography are not developed or integrated into the text to a degree commensurate with present-day neurologic practice nor are the rapid advances in the development of the newer drugs for epilepsy, Parkinsonism, etc. included.

The bibliography has been increased and is reasonably up to date although recent references are not present in any quantity. The editor has tried to include the most important advances but these are occurring at too rapid a rate to allow the text to be as current as one would like. The work is readable, clearly illustrated and well printed.

The publication of this revised edition makes it available to those who have been unable to obtain a copy of the exhausted first edition and I believe that its usefulness as a reference work will continue for many years to come. Although not so current as the neophyte neurologist would like, no apology is necessary for it still remains a neurologic classic. Every serious neurologist will want these volumes for frequent reference and they are highly recommended.

—RICHARD R. CAMERON, Col., MC USA

THE COAGULATION OF BLOOD. METHODS OF STUDY. Edited by L. D. M. T. 1955. M. D. 240 pages. Illustrated. Gr. & Str. In N. Y. K. N. Y. 1955. P. \$5.75.

In the 1930's when dicumarol was discovered, research in blood coagulation flared into activity and information concerning hemostasis has crept rapidly and unduly earlier. Many theories of coagulation have been constructed, many new factors have been discovered, old ones have been rediscovered, and several names have been given to each of the factors. Confusion has resulted and it too often attempts to clarify the subject have collapsed in a welter of acrimonious debate. This was only partly due to the pride of parthood that seized investigators who had rediscovered and renamed new coagulation factors. Each discovery involved the invention or modification of methods and in any field there were some investigators who seemed incapable of describing methods in such a way that others could reproduce their results. Sometimes yet

passed before it could be determined with certainty that the various names bestowed in different laboratories referred to a single factor. Nowadays the dust seems to be settling and books like this will help.

The Coagulation of Blood is a book of methods. Without disparagement it may be called a cookbook because the descriptions are so detailed and clear. No attempt is made to present theories of coagulation or descriptions of hemorrhagic and thrombotic diseases. Few alternate methods are given. It has been the editor's aim to present the best one in each case and in most instances this seems to have been accomplished. It is unlikely that many established investigators will abandon their own methods to use those in this book but workers who come presently to the field will profit. Perhaps the book may bring a little more coherence into this area and it certainly can serve as an excellent guide to the clinical pathologist who is called upon to utilize diagnostic methods.

The book was prepared under the sponsorship of the Panel of Blood Coagulation of the National Research Council. The editor has relied heavily upon his fellow panel members as contributors, has made his selections with care and has insisted upon a high level of presentation. It would be difficult to overestimate the value and importance of this book. —WILLIAM H. CROSBY, Lt. Col. MC USA

DIABETES MELLITUS by *Henry T. Ricketts* M.D. American Lecture Series Publication Number 241. A Monograph in American Lectures in Endocrinology. 123 pages, illustrated. Charles C. Thomas, Publisher, Springfield, Ill. 1955. Price \$3.25.

This little book is a handy guide to the principles of management of diabetes mellitus. The author, an expert in the field, has based this review on common errors and frequent problems encountered at the University of Chicago Clinics.

This reviewer agrees with the statement that it is high time that the fetish of the fasting blood sugar as a guide to diagnosis be abandoned. The postprandial blood sugar is more logical and convenient. A surprisingly large number of subjects are touched on in the course of this essay. Thus, although insulin preparations are discussed briefly, the recently introduced "Lente" insulin is mentioned. A useful feature is the calculation of the diabetic diet as explained by material modified from lists prepared by the American Diabetes Association.

The advantages of this monograph are that it maintains an eminently practical tone throughout and that all the recommendations are sound, well established and accepted. The limitation is that the discussions are too brief in many respects, even for the general practitioner for whom the book is intended. It will be most useful as a practical hand book when used in conjunction with a larger treatise, a combination which would serve as a "consultant" to the practicing clinician.

—S. O. WAITE, Lt. (MC) USNR

ADVANCES IN PEDIATRICS V. 10, No. 1, 1964, 128 pages, \$1.50. Published by the American Academy of Pediatrics, 535 North Dearborn Street, Chicago, Illinois 60610. This volume contains 10 articles on various topics in pediatrics, including: "The Role of the Pediatrician in the Management of the Child with a Chronic Disease," "The Role of the Pediatrician in the Management of the Child with a Mental Disorder," "The Role of the Pediatrician in the Management of the Child with a Physical Disorder," "The Role of the Pediatrician in the Management of the Child with a Social Disorder," "The Role of the Pediatrician in the Management of the Child with a Family Disorder," "The Role of the Pediatrician in the Management of the Child with a Community Disorder," "The Role of the Pediatrician in the Management of the Child with a National Disorder," "The Role of the Pediatrician in the Management of the Child with a World Disorder," "The Role of the Pediatrician in the Management of the Child with a Universal Disorder," and "The Role of the Pediatrician in the Management of the Child with a Global Disorder." The volume is a valuable resource for pediatricians and other healthcare professionals.

Volume VII continues the fine series of Advances in Pediatrics by outstanding contributors. John Caffey provides a section on fibrous defects in the cortical walls of growing tubular bones well illustrated by many radiographs.

Meredith Campbell discusses the urinary tract in childhood. He emphasizes as always the importance of a systematic routine of urologic examination in infants and children.

Gomez Galvan Cravioto and Frenk of the Hospital Infantil de Mexico present an excellent analysis of malnutrition in infancy and childhood with special reference to kwashiorkor pointing out the similarity of the clinical pictures of kwashiorkor and malnutrition in various regions of the world where the diet is composed largely of carbohydrate and is deficient in animal protein in fats vegetable fruits and milk.

The section on infantile cerebral palsy by Meyer Perlstein is entitled Precipitating factors and associated defects. A broad view of treatment is suggested.

Harry Shwachman and two associates present an excellent discussion of mucopolysaccharidoses including a new outline of differential diagnosis between idiopathic and lysosomal diseases and mucopolysaccharidoses.

There is a fine action on congenital megacolon by Orr & Swanson. He believes that most patients will tolerate resection and a tomos without preliminary colostomy but that it is imprudent to attempt more than colostomy in cases of acute obstruction, immense distention or in newborn or small infants in poor condition. The pull-through operation is described and postoperative care discussed.

Each section with one exception is followed by a good bibliography. An adequate subject and a thorough index is provided. The volume is highly recommended to pediatric and pediatric surgeons.

—MILTON KURZROK *Comdr (MC) USN*

DISEASES OF THE EAR NOSE AND THROAT by William W. Hall, M.D.
 M.D. 2d ed. 756 pag. Illustrated. Appleton-Century-Crofts Inc.
 New York, N.Y. 1955.

Well indexed simple concise clearly illustrated easy to read usable material with utmost brevity typifies this revised text. The book is primarily for the undergraduate student but the material covered and the up-to-date presentation is adequate and more than a help for the general practitioner but also as a quick ready reference for the practicing otolaryngologist. The formulary is not excessive yet contains simple time proven medication.

In his first edition Dr Morrison produced a lucid terse well organized study of the anatomy and physiology and treatment of diseases of the ear nose, and throat. This fulfilled a basic need for completeness without going into extremes of detail or into the very rare and exotic. He gave adequate bibliographies with references to more complete works for those wishing to seek further into a specific subject.

In the second edition this same practice is continued with the addition of recent references and newer concepts in regard to antibiotic therapy and allergy. Portions of the text are revised and regrouped for easier correlation and reading. One of the biggest improvements is the provision of easier to read symptom and subject indexes.

I should not replace my first edition with the second as the same basic material is covered nearly word for word in the majority of the text, but to any practitioner seeking a new quick reference on present day up-to-date diagnosis and treatment in basic ENT this book would be a valuable asset.—LESLIE O. STONE R. Adm. (MC) USN

OF PUBLISHING SCIENTIFIC PAPERS by George E. Burch M.D. F.A.C.P.
40 pages illustrated Grune & Stratton Inc. New York N.Y. 1954
Price \$2.75

This short essay contains much good advice—advice which should be heeded by all writers, readers, and editors of scientific publications. Curiously it is written in a flat off-hand style while in contrast the titles of the sections and particularly the excellent illustrations by Roy Robinson are humorous and clever. Thus we have described for us the self-plagiarist, the summary addict, and the board-ophiliac. The role and responsibilities of the publisher, the lay press, and the benefactor administrator also come in for their share of comment.

There is no question but that the present situation of scientific medical writing is unsatisfactory and this little book in a pleasant way has scratched the surface and indicated lines of study and correction. Its message deserves a wide hearing.

—S. O. WAIFE, L. ut (MC) USNR

FORCEPS DELIVERIES by Edward H. Denen, M.D. F.A.C.S. First volume of a Series of Monographs on Obstetric and Gynecology. Edited by Claude E. Hutton M.D. 225 pages, 90 illustrations. F.A. Davis Co. Philadelphia, Pa. 1955. Price \$6.50.

This book gives detailed instruction in the proper selection and use of the various types of obstetrical forceps and refutes the old teaching that the good obstetrician need only to learn how to use one type of forceps and use it well.

A concise history of obstetrical forceps is given as background material. The many relatively new improved types of instruments and the finer techniques in advanced forceps deliveries representing a dramatic chapter in the history of medical progress are well covered.

A classification is outlined of forceps operations according to the station of the head in the pelvis. The eight positions in which the fetal occiput may lie at the time of operation are taken up in appropriate and progressive order. Different instrumental operations, manual maneuvers, and choice of instrument are described clearly. The subject matter includes the prerequisites for forceps operation, a detailed description of the proper use of forceps of all types, and the advantages and disadvantages of one type over another under specific existing conditions.

Ninety excellent drawings which clearly outline position, head, instrument, technique, and the final positions in all operations reflect the vast experience of the author both in operative work and in teaching at the operating table. The index and bibliography are fully adequate.

This monograph is highly recommended to anyone practicing obstetrics.—EDWARD A. ZIMMERMAN, C. L. MC USA

SEMI-MICRO ORGANIC PREPARATIONS by J. H. WILK, Ph.D., F.R.I.C.
94 pages, illustrated, Chemical and Technical Publications, Springfield, Ill.
1954, P. \$2

Semi-micro techniques described here as a standard text are coming into increasing demand because of the need for small-scale synthetic reactions—the biological sciences and where it is necessary to conserve material.

The first few chapters are concerned with basic semi-micro techniques such as distillation, refluxing, filtration, and melting point determination. The chemistry apparatus is well illustrated. Well-written chapters on the preparation of a series of organic compounds cover a large number of the basic organic reactions. The author has selected experiments designed to utilize to the full the extent of the semi-micro equipment discussed earlier chapters.

The book is well written, concise, and to the point.

—IRVING GRAY, Lt. Col. MC USA

ADVANCED SURGERY OF CATARACT by D. I. B. K. by M. D. 271 pages
138 figures, 96 illustrations (22 plates), illustrated by J. B. L. pp.
C. Philadelph. P. 1955, P. \$27

This monograph was the final work of a great eye surgeon, a dynamic personality and made timely to take his place on the honor roll of world-known ophthalmic surgeons. Cataract surgery was his life study. His first volume, *Surgery of Cataract*, was an exhaustive reference work published in 1950. This second volume was written to emphasize what he considered to be his first work. His wealth of personal experience in methods of meticulous technique and care in the prevention of complications are well described.

The volume contains 13 chapters including a series from the current literature, classification, findings, diagnosis, prognosis, preoperative

preparation instrumentation and wound healing aspiration technic for congenital cataract detailed technics including incision and suturing complications and the adjustment of the patient to aphakia The illustrations are well captioned and beautifully done The bibliography is extensive

There is much for any ophthalmic surgeon to learn from this book however there are certain dogmatic statements which are controversial The almost routine use of intravenous curare for akinesia and the heroic method of direct zonular separation though not generally accepted obviously worked well in Kirby's hands

This book is a "must" for every ophthalmologist and should be on the shelf of any library furnishing reference material in ocular surgery

—JOHN H KING J Col MC USA

STRESS SITUATIONS edited by Samuel Liebman M.D. 144 pages J B Lippincott Co Philadelphia Pa 1955 Price \$3

This handy well printed volume contains a series of articles by seven authors who are well known in psychiatric circles on the common theme of emotional reactions to various stressful situations The articles were originally designed for presentation before the staff and resident physicians and guests of a psychiatric hospital The papers are published from the stenographic reports of the lectures and include the questions and answers which followed the talks This gives an informal tone to the book that makes for easy reading but some of the remarks addressed to the audience seem rather inappropriate for the single reader

In general the level in most of these papers was scaled to the most unsophisticated person in the audience The various chapters seemed rather spotty in quality but it is realized that this is the point where the personal biases of the reviewer are most likely to appear The volume concludes with an adequate index Any profits which may accrue from the publication of this volume are to be donated to the American Psychiatric Association for use in its work

This very readable volume is recommended to the busy practitioner who wishes to learn something about how psychiatrists evaluate the reactions of human beings to various stressful life situations

—IRA C NICHOLS Capt (MC) USN

FUNDAMENTAL CONSIDERATIONS IN ANESTHESIA by Charles L. Bursztin M.D. 2d edition 219 pages illustrated The Macmillan Co New York N.Y. 1955 Price \$5.50

This second edition encompasses several changes from the original text published in 1949 with added discussions of muscle relaxants autonomic ganglionic blocks and antiarrhythmic agents The text is concerned more with the science of anesthesia than with its The author presents brief concise discussions of the role of the autonomic nervous system as it modifies respiratory circulatory and

cular activities and is influenced by the more common anesthetic drugs and procedures. Many of the conclusions are based upon or obviously influenced by the animal experimentation conducted by the author and others. Of considerable interest to the flight surgeon is the author's statement: "Positive pressure respiration is abnormal and harmful. It should be avoided."

The art of anesthesia is not entirely neglected. There is an excellent discussion of indications for and methods of respiratory and circulatory control by mechanical and chemical means. The text is logically arranged, profusely illustrated and adequately referenced. Controversial subjects are essentially ignored. The subject of shock is covered in 20 pages of text 5 of which are illustrations and references and of cardiac arrhythmia in 20 pages with 13 pages of illustrations and references. For the student and the busy anesthetologist the volume can perhaps best be used as a reference index.

—ROBERT F. CORWIN, C. L. USAF (MC)

SELECTED PAPERS OF DR. FRANK N. WILSON, edited by Franklin D. Johnson, M.D., D.E.S., L.P., Bk. M.D. 1135, pag. 11, treat. J. W. Edw. d. P. bl. b. r. l. A. A. b. M. h. 1954 P. \$8.

This book contains 53 selected papers of which Dr. Frank N. Wilson is the author. There also is a concise biography of Dr. Wilson together with his complete bibliography of 152 publications. Although 20 of the edited or bear his name as author or coauthor they come from works in his laboratory and he contributed greatly to their preparation.

The editors have performed a splendid job in the selection of the papers reprinted or published for the first time in this book. They included those articles that contained the fundamental theoretic or experimental observations of this great American physiologist and scientist. Because Dr. Wilson never published a text of any kind this information formerly could be found only in widely scattered journals published over a period of 40 years. Much of this material has become a basic reference source for numerous publications including texts in the field of electrocardiography and cardiology. Many of these were published by his former associates.

The publication of this material in a single volume has resulted in a tremendously valuable book which should be basic reading material for internists and cardiologists and a frequent source reference for medical students. The many friends and admirers of Dr. Wilson all over the world had hoped that someday this modest person would put together his book his thoughts, ideas and accomplishments. Although he never produced such a volume this compilation of his selected papers is in a small way a substitute. The editors are to be congratulated for a job well done.—THOMAS W. MATTINGLY, C. L. MC USA.

ANXIETY AND STRESS An Interdisciplinary Study of a Life Situation by
Harold Basowitz Harold Persky Sheldon J. Korchin and Roy R. Grink
e 320 pages illustrated The Blakiston Div McGraw Hill Book Co
Inc New York N Y 1955 Price \$8

This book reports a study on anxiety and stress in a group of soldiers in airborne training at the Infantry School U S Army Fort Benning Ga The study made by a distinguished psychiatrist two psychologists, and a chemist was conducted on soldiers undergoing a rigid training schedule that was conducive to anxiety and stress

Various psychologic tests and blood chemical determinations were performed and are presented in 70 tables and 44 figures

This is a well written volume free of typographical errors There is an excellent chapter on anxiety which will interest every psychiatrist Selected case histories are interesting reading The study gives evidence of an immense amount of work which has been carefully executed and the conclusions contribute to our knowledge of psychosomatic medicine The method of conducting the study could well serve as a plan for future studies on emotional problems Much material contained in this book gives new light on the subject of anxiety and stress —FRANCES L WILLOUGHBY *Comdr (MC) USN*

GERIATRIC ANESTHESIA by Paul H Lorban M D American Lecture Series Publication Number 245 A Monograph in American Lectures to Anesthesiology Edited by John Adams M D 90 pages Charles C Thomas Publisher Springfield Ill 1955 Price \$3 25

In this era of increased life span this is a timely monograph Many people reaching old age have or develop conditions which must be corrected by an operation if they are to spend their declining years in comfort

The book consists of nine easily read chapters which follow the time proved form for books on anesthesia The first chapter discusses the patient and the effect of advanced years on each organ in the body Subsequent chapters take up preoperative preparation and preanesthetic medication surgical management choice of anesthetic agent method of administration and management of the anesthetic and postoperative management

The author has done an excellent job of compiling and organizing a mass of information not heretofore concentrated in any one place He has reminded us that by adhering to basic principles namely proper hydration and oxygenation gentleness and minimal duration of procedure the geriatric patient can undergo anesthesia and surgical procedure with the same degree of success as patients in a younger age group

There is an excellent bibliography of 39 articles

—JOHN J SHERIDAN M D MC USA

ANALYSIS OF DEVELOPMENT edited by Be j m H W ll Ph D Sc D
P l A W is Ph D M D (hon) nd V ktor H mb ger Ph D
735 pag illustrated W B Sa d C Ph lad lphia P 1955

In the words of the authors the purpose of this book is to present a modern *synthesis* of our knowledge of the principles and mechanisms of development. Written in the form of a symposium the volume draws on a wide variety of animal e perimental material to analyze the main problems that have confronted experimental embryologists. Some of the most distinguished figures in American embryology are among the 28 contributors.

No attempt has been made to describe systematically the development of a y one organism rather experimental material has been organized around the central problems of cell and tissue differentiation. An important section is devoted to cellular structure and metabolism and the possible role of various cytologic organelles in the differentiation of the cell. Another section describes tissue interrelationships in the development of specific vertebrate organ systems. The problems of embryologic movements establishment of organ fields regeneration and determination of adult size and antigenic specificity also receive attention. The discussion is abundantly documented throughout from the experimental literature with an extensive bibliography for each section.

This book is a up to date complete and accurate discussion of the principles and mechanisms of differentiation as can be found. Although the fields under discussion are in such rapid state of flux that some of the material was outdated between the time of writing and publication. As more experimental material comes in the speculative parts of the authors may be further supported or invalidated. In such controversial fields the authors' opinions are necessarily their own and the reader must make his own judgments on the basis of the evidence presented.

Analysis of Development should be valuable to those interested in the theory of embryology. No attempt has been made to slant the material toward clinically important problems or the human embryo but study of the material presented should result in a better understanding of the fundamentals underlying purely descriptive human embryology.

—GORDON B. AVERY

DIFFERENTIAL DIAGNOSIS OF INTERNAL DISEASES Clinical Analysis
of Symptoms and Signs on Pathophysiology by B. J. A. C. P.
revised and enlarged edition By Julius Ba M D F A C P
987 pag illustrated G. Ne & Stratton I N W Y k N Y 1955
P \$15

This is the second edition and enlargement of an earlier volume by the same author. This volume is divided into two parts: Leading Symptoms and Leading Signs. The first part is subdivided stressing symptoms by anatomic location. In addition the part on symptoms in

cludes chapters on Disorders of General Feelings Disorders of Consciousness Vertigo Nausea and Vomitus Paralysis In coordination and Involuntary Movements Cough and Dyspnea Diarrhea and Constipation and Hemorrhages The second part is subdivided into the various systems including fevers habitus and a chapter on glycosuria The title is very all inclusive and one has the feeling in reviewing the text that one's expectancy is not quite fulfilled It would be difficult indeed to discuss detailed pathophysiology detailed differential diagnosis and clinical analysis of internal diseases in 900 pages In general both the symptoms and signs are presented in a clear concise fashion reflecting the teaching ability of the author Each chapter is concluded by a summary and a generous bibliography on the points discussed A generous use has been made of case histories to illustrate many points While these are instructive this reviewer believes that the space required might have been more informatively used by elaborating further on the point at hand

While there are 60 some figures and two tables of very informative value I believe that a more liberal use of graphs charts and other illustrations would be more informative than case histories Presenting differential diagnosis in this fashion necessitates a number of references in the index to various facets of any one clinical entity

The author makes a practical approach to the psychosomatic aspects of disease and the neurotic component The book is well indexed The text would serve as a good reference in medical schools and hospitals and as an office reference to the practitioner

—FRANCIS W. PRUITT Col MC USA

FLIGHT SURGEON'S MANUAL Air Force Manual Number 160 5 Department of the Air Force Washington D C 712 pages illustrated Air University USAF School of Aviation Medicine Randolph Air Force Base Randolph Field Tex July 1954

Published as an official Air Force manual this volume is an outgrowth of a small *Flight Surgeon's Handbook* which was prepared by the faculty of the School of Aviation Medicine in 1942 A second edition appeared the following year and a *Flight Surgeon's Reference File* was published as an official Army Air Forces manual in 1945 The present loose leaf binding is the most comprehensive publication of aviation medicine ever to appear in one volume

The manual is composed of 11 sections of which the first 5 cover more than 500 pages and are of major interest to the practitioner of aviation medicine These sections are on aircrew effectiveness preventive medicine aeromedical aspects of unconventional warfare aviation medicine research and development and aeromedical evacuation The last 6 sections of the book are on administrative military aspects of aviation medicine in the Air Force

For a work of this scope the index is inadequate both in the number of entries and in cross references. For example, as common term as low pressure chamber was not included nor was it found under decompression chamber. Otitis media is given as a single page listing but under dysbarism there are other page references to aerotitis media.

This manual particularly the first five sections has been widely recommended for study by physicians preparing for specialty board examinations in aviation medicine. Unfortunately the book is not for public sale. Copies have been distributed to all Air Force treatment facilities and to each aviation medical officer and in addition to leading medical libraries throughout the country. As is customary in official publications no author credits are given.

—ROBERT J. BENFORD C. L. USAF (MC)

TEA: A Symposium with Pharmacology and Physiology and Psychology
Effect of Tea Edited by Henry J. Klauber Ph.D. 64 pages
Illustrated. The Biological Foundation and on Led with W. H. Gton D. C.
1955 Price \$1

For this symposium seven authors presented their views on the various aspects of the effect of tea on the human. They are competent discussions of the effect of tea on body systems and on psychological function and even on derivation of the optimum time for brew and its relation to the caffeine and tannin content of the product. Two of the articles had been published elsewhere. The views of the speakers are uniformly favorable to the drinking of this beverage. Except for the two articles previously published the book does not contribute much original information. It may be of interest to those dealing with diet formulations and to physicians wishing to learn the most recent opinion concerning the value of tea. —PAUL K. SMITH C. I. USAFR

HISTORY OF THE SECOND WORLD WAR: United Kingdom Medical Services
Edited by Charles S. Ashurst M. B. N. K. C. B. M. D. F. R. C. P.
F. R. C. S. THE ROYAL AIR FORCE MEDICAL SERVICES Edited by
Squad Leader S. C. R. Ford W. H. M. A. M. R. C. S. L. R. C. P.
R. A. F. Volume I Administration 611 pages Illustrated Published
by H. Maj. Gen. Sea of Off. Ltd. E. C. I. 1954. To be purchased from York House, Kingsway, London W. C. 2. Price 70s. (\$12.60)

This is the first of three volumes that deal with the Royal Air Force Medical Services in World War II. Concerned primarily with administration it lays the groundwork for the two succeeding volumes which will treat the Command and the Campaigns respectively. The three-volume unit is one part of the United Kingdom Medical Series.

The thirteen chapters concern the following topics: beginning with medical officers and wing orderlies, the nursing and dental service, hospital accommodation, hygiene and sanitation, medical equipment and supplies, medical arrangement for the Women's Auxiliary Air Force, evacuation of casualties, air/sea rescue, medical aspects

of trooping and prisoners of war. Each section is authoritative and readable but unlike previous volumes in the series (*Medicine and Pathology and Surgery*) this volume does not include bibliographic materials.

The account has objectivity and balance. Recorded here are the mistakes as well as the successes of the RAF Medical Services. Medical administration is treated within the framework of the major command mission and evaluated accordingly; the medical element *per se* never becomes isolated. At the same time the account reflects the human element.

Medical planners no less than students of military and administrative history will find the narrative of particular interest. For comparative purposes it is interesting to trace British and American attitudes and policies along similar lines. For example the British had a 30 year lead over the United States in the organization and development of a separate air force and a supporting medical service. Their experience in such developments as the Central Medical Establishment accordingly provided inestimable help for the harassed U.S. Air Forces which had to improvise along command lines in World War II. Yet despite their forward looking organizational advances the British high command appears to have been just as reluctant as the United States high command to accept air evacuation of the sick and wounded as a routine operating procedure.

For the astute reader there are lessons to learn from careful study of this important volume.—MAE M. LINK, Pb D

TREATMENT IN PSYCHIATRY by Oskar Dietl Im M D 3d edition 545 pages Charles C Thomas Publisher Springfield Ill 1955 Price \$9.50

This edition follows the second edition by about five years and is essentially the same book with which most psychiatrists are already familiar. Certain subjects that were included as new developments in the second edition have been integrated into appropriate sections of the text and new material including some on chlorpromazine and reserpine appears under the heading of current progress (the final chapter in both editions). A chapter on dynamic psychotherapy replaces one which was formerly entitled Distributive Analysis and Synthesis. The discussion has been revised and improved considerably but the basic therapeutic philosophy remains about the same as before. The cases presented are the same as used previously to illustrate distributive analysis.

The scope of this book is very broad sometimes perhaps to its detriment but it remains a useful conservative general reference in the field of therapeutic psychiatry. The new edition is not sufficiently different from the previous one to warrant having both in one's personal library.—WILLIAM H. ANDERSON Lt Col MC USA

HUMAN PATHOLOGY by *H w d T K ne* M D LL D 8th d on 960
p ge 557 il tr t na bl k d wht nd 19 ubj t lor
14 pl J B L pp ocr Co Philad lphia P 1955 P \$15

SPLENIN A IN RHEUMATIC FEVER Th T t g f Spl A A t
nflamma ocy Ag t by *Al F C burn* M D Luc l V M M D
Jud th W od M D d M ry R b t R N f m Th Rheum t
F R h I t t t N thwe m Uni ty M d l Sch l
Ch g Ill 87 pag Ch l C Th ma P bl her Spr gf ld Ill
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INTRODUCTION TO OPERATING-ROOM TECHNIQUE by *Edna C m l*
B ry R N d M ry L K hn R N M N 154 pag Th
Bl k t D M Ge w Ill Book C loc N w Y k N Y
1955 P c \$4

A SHORT HISTORY OF MEDICINE by *Eru H A k k ht* M D 258
p g Th R ld P Co N w York N Y 1955 P \$4 50

THE MECHANISMS OF HEALING IN HUMAN WOUNDS A C lat f th
Cl l d T F tor I l d th H l ng of H m Surg c l
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M D Ph D Surg ry F A C S F l C S 166 p ge 44 llustr
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P \$3 25

ESSENTIALS OF CHEMISTRY by *Gr t h O Lw* M A 6th d t 544
p ge llustr t d J B L ppia Co Ph lad lphia P 1955 P
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1955 P \$4 50

NURSING PRACTICE AND THE LAW by *Milton J L uk d B E*
And n R N ED D 2d d t 400 pag J B Lipp tr Co
Ph l d lph P 1955 Pr \$6

SURGERY OF THE AMBULATORY PATIENT by *L K F rg n* M D
F A C S w th Se t o F ctur by *L K plan* M D
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phia P 1955 P \$12

ESSENTIALS OF PHARMACOLOGY by *F K Oldh m* Ph D M D
F F K l y Ph D d E M K Ge l g Ph D M D 3d d t n
520 pag ill d J B Lipp ocr Co Ph l d lph P 1955
P \$6

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by *J b H L ur* M D D Sc F A C P 136 pag ill tr t d
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Y rk N Y 1955 P \$3 50

ROOT CANAL THERAPY by *L ss L G m n* D D S Dr m d d t
F A C D 4th d t 399 pag 347 il t t na 140 figur l
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REFERENCES

References to published literature should be listed at the end of the article in the numerical order in which they are cited in the author's text Care and accuracy in their preparation will expedite publication of the article Following are correct examples of references

Fleming A Young M Y Suchet J and Rowe A J E Penicillin content of blood serum after various doses of penicillin by various routes *Lancet* 2 621-624 Nov 11 1944

Cabot R C Pernicious and secondary anemia chlorosis and leukemia In Osler W (editor) *Modern Medicine* 3d edition Lea & Febiger Philadelphia Pa 1927 Vol 5 pp 33-100

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WASHINGTON 1955

Monthly Message

In 1911 I took a course in sociology under Professor T. N. Cuyver at Harvard. In his first lecture he propounded the question: What is progress? That became our theme of discussion for the entire year and the course ended with the same question. Many times we think we make progress when as a matter of fact all we do is to bring about change.

Although unquestionably we have made strides of real progress in medicine during the past half century, still we must not lose sight of the past. Every now and then we should ask ourselves whether or not we are deviating from our main axis, so that we find ourselves in periods of change rather than progress. Our emphasis has been on scientific medicine, physiology and the natural sciences as they affect man but as Dr. George I. Berry points out, "As medical education has become more complex it has splintered and each splinter is rapidly accumulating its own body of knowledge forcing the specialties further and further apart."

Therefore it is time to reappraise the whole subject of medical education to ascertain whether or not it should be put together and presented to the student with greater effort in a more synoptic type of instruction so that man may be considered as a whole with the various aspects of medical teaching centered about him and co-ordinated one with another rather than considering each organ or system as an entity unto itself. Already several experiments are in operation at some of our medical schools and the Association of American Medical Colleges has begun a series of six annual teaching institutes to consider the whole structure of medical education: (1) physiology, biochemistry and pharmacology, (2) pathology, microbiology, immunology and genetics, (3) anatomy, histology, embryology and anthropology, (4) medical ecology, (5) clinical teaching including the internship and (6) specialty training and the continuing education of the physician. These institutes should be provocative of considerable free discussion and all of us in the medical profession will await with great interest the reports of the proceedings.

Frank B. Berry

FRANK B. BERRY, M.D.

Assistant Secretary of Defense
(Health and Medical)

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Foreword

The United States Armed Forces Medical Journal is the medium for the publication of the medical literature of the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surgeon General of the Army (Health and Medical Affairs) and the Medical Service Corps of the Army and the Medical Bureau of the Army Navy and Air Force are the primary contributors to the Journal.

FRANK B. BERRY, M.D.

Assistant Secretary of Defense (Health and Medical).

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UNITED STATES ARMED FORCES MEDICAL JOURNAL

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February 1955

Number 2

EARLY MANAGEMENT OF THE PARAPLEGIC PATIENT

HOWARD A. RUSK, *Brigadier General USAFR (MC)*

SINCE the adoption of the policy early in the Korean conflict of transferring severely disabled patients to the Veterans Administration hospitals as early as possible, the military medical officer is not as likely to be responsible for the rehabilitation of paraplegics as formerly. The management of the patient with traumatic paraplegia from the onset of his injury until such transfer takes place, however, is definitely a responsibility of military medicine and much of the later success in restoring the patient to the best mode of life of which he is capable is dependent on early management.

Paraplegia is usually thought of in terms of battle casualties, but the number of cases resulting from accidents is of significance in itself. In World War II, about 2,500 were thus disabled as a result of battle injuries, accidents, and disease, but during this same period some 15,000 civilians became paraplegic from accidents alone. Although more than 1,700 of the original group of 2,500 World War II paraplegics have been discharged from Veterans Administration hospitals, for every patient discharged there has been an admission as a result of accident or disease.

Experience in military and Veterans Administration hospitals and civilian rehabilitation centers has shown that despite the severity of their disabilities a high percentage of paraplegic patients can be retrained to live productive lives. Experience has also shown that it takes more than twice as long to clear up the complications due to inadequate management, such as kidney disorders, decubitus ulcers and contractions, than it does to complete the total rehabilitation program *per se*.

In general the management of the paraplegic patient falls in two broad phases: the definitive and rehabilitation phases. However, as Kessler and Abramson¹ have pointed out, "the

From New York University Medical Center, New York, N. Y.

division between definitive and rehabilitation medicine is purely artificial actually both phases must proceed simultaneously and they must be carefully integrated so that they become part of the one overall program directed toward a common goal

In both of these phases the needs of the patient can be met only by an integrated team approach to the patient and his problem The internist is concerned with the patient's nutritional problems the neurosurgeon with the compression of the spinal cord pain and relief of spasticity by surgical methods the orthopedist with contractures spinal deformities and bracing the urologist with the problems of the bladder and the plastic surgeon with decubitus ulcers No one person regardless of his experience and training can be competent to meet these diverse needs of the patient

MANAGEMENT OF THE ACUTE INJURY

Of particular importance to the military physician is the management of the patient during the acute period following the injury The proper management of the patient from the time of his injury before he can be moved a period of 14 to 18 days can prevent a great many of the complications that are frequently associated with spinal cord injury spare the patient subsequent discomfort and reduce the cost of extensive hospitalization

A patient suffering from partial or total paralysis from acute spinal cord injury should be removed from the scene of the accident with the greatest care Blood loss and surgical shock are rarely important factors except in multiple injuries Frequently the spinal cord has been transected after the accident by overzealous first aiders who remember the old rule transport the patient with the spinal cord in hyperextension This rule is obviously illogical because posturing should depend on the type of injury The patient's back should not be flexed or hyperextended His head should not be lifted unless its position interferes with respiration He should be transported in a neutral position on a level surface such as a stretcher or a wide flat board If he must be lifted this should be done slowly preferably with men working together to keep his head neck back and legs all held straight in the neutral anatomic position An ordinary door because of its size strength and rigidity makes an excellent stretcher Care should be taken not to bounce or jostle the patient.

As little movement as possible should be allowed during the patient's initial care Roentgenograms of the back should be taken on the original stretcher It is preferable to defer roentgenography rather than risk further trauma

A flat, hard surface with a foam rubber mattress is satisfactory for a bed and a Stryker frame may be used to enable nurses and attendants to turn the patient frequently without risk of further injury. Particular care should be given to the selection of trained nurses and attendants, as a single twisting or flexion of the spine may be enough to make a reversible spinal cord lesion into an irreversible lesion with no hope of further return of function to the muscles of the lower extremities.

In our experience at the Institute of Physical Medicine and Rehabilitation, New York University Bellevue Medical Center, early laminectomy is desirable in spinal cord injuries (except in high cervical lesions), especially if block is demonstrated. We believe that it is impossible to diagnose accurately transection in contradistinction to malfunction due to contusion and edema. Laminectomy done by a skillful neurosurgeon carries with it such a minimum risk that only in multiple injuries and shock should its exclusion be seriously considered. Psychologically, laminectomy is invaluable in the rehabilitation phase for if the patient can be told unequivocally that his spinal cord is transected, acceptance comes much more easily and facilitates an active training program tremendously.²

MANAGEMENT OF SPECIFIC PROBLEMS

Skilled nursing care in the management of the paraplegic patient is fundamental.³ He should be turned at least every two hours, night and day, to prevent bedsores. Decubitus ulcer most frequently occurs in the sacrum, trochanter, and ischium. In addition, ulcers may develop over the knees, on the heels of the foot, and on the forehead in the case of a patient with a cervical vertebral fracture in the prone position. Light massage of the skin over pressure areas can be of help in preventing ulcers.

During the period of spinal shock, many paraplegic patients cannot lose body heat by perspiration from the paralyzed portions of their bodies, and, consequently, there may be spontaneous febrile episodes. If specific causes cannot be found, antipyretic measures such as acetylsalicylic acid, fans, cold sponge baths, and ice water enemas can be used. Sweating usually returns after spinal shock subsides, and in some patients profuse sweating may develop over the nonparalyzed portion of their bodies.

Because few paraplegic patients have severe pain, opiates should be avoided if possible. In most instances pain can be controlled with acetylsalicylic acid compound and sedatives, while opiates should be used only as a last resort. The paraplegic patient who is also a drug addict presents one of the most difficult problems in medicine.

Acute spinal cord injury may be followed by profound distention of the bowel. This occasionally becomes so severe as to embarrass respiration interfere with ingestion of food and produce severe discomfort. Distention should be treated with neostigmine methylsulfate (prostigmine) intramuscularly or by rectal tube enema and if necessary Wangensteen drainage. The rectum should be emptied every other day by suppositories, enemas or digital evacuation.

An indwelling urethral catheter (Foley) should be introduced early during the acute period. The bladder should be irrigated three times daily with isotonic sodium chloride solution. Care must be taken that the catheter does not become blocked and it should be changed at least twice weekly. Absolute asepsis must be the rule throughout. The abdomen must be checked frequently for bladder distention.

The use of small repeated doses of a urinary antiseptic such as methenamine or of sulfonamides will help prevent urinary infection. The development of bowel and bladder automaticity requires meticulous training through the co-operative efforts of the physician, nurse and patient.

METABOLIC MANAGEMENT

A high caloric (4 000) high protein (150 gram) diet is essential with protein hydrolysates added if tolerated. If a patient cannot eat satisfactorily whole blood serum albumin or plasma expanders should be given intravenously in small repeated doses. Plasma should be used with caution because of the possibility of hepatitis. As Cooper and Hoen have pointed out any acute injury to the spinal cord which is sufficiently severe to cause paraplegia produces a marked catabolism of body protein which is reflected in the urinary excretion of large amounts of nitrogen. During the first two weeks after injury there is invariably a strongly negative nitrogen balance of as much as 25 grams a day. Because a high protein diet may increase nitrogen output clinical difficulties are commonly encountered in maintaining an adequate nutritional balance. In the majority of patients however a normal nitrogen balance is re-established eight to 10 weeks after injury.

Other metabolic disorders reported by Cooper and Hoen include impaired liver function as evidenced by the bromsulphalein liver function test, an invariable decrease in basal metabolic rate, unilateral or bilateral mammary enlargement in about 20 percent of male subjects with traumatic paraplegia, testicular atrophy in more than 50 percent of male patients and cessation of menstruation for a period of three to six months in young adult female patients.

An intramuscular injection of 50 mg of testosterone propionate daily from the first day of injury will decrease the incidence of tissue breakdown, osteoporosis, weight loss, and decubitus ulcer formation

Patients with paraplegia often exhibit marked atrophy of the unaffected upper extremities from disuse or malnutrition⁶ It is important, therefore that conditioning exercises be started early Patients should be started on active exercises of the unaffected parts of the body with special precaution to prevent spinal flexion or hyperextension Exercises to strengthen the triceps and finger flexors are particularly important as these muscles are essential in "crutch walking" Many hospital routines include a trapeze or monkey bar to facilitate movement This, however, does nothing to develop the tricep muscles in fact, because gravity pulls the patient down, there is often a disuse atrophy of the triceps

Twice daily all joints of the lower extremities should be moved passively 10 times through a complete range of motion Care must be taken to prevent drop foot The sheets should be left loose over the foot of the bed and the patient's feet should be kept at a right angle to the leg at all times, either by a footboard, a posterior splint or a half shell plaster cast These patients must have a 90° dorsiflexion of the foot at the ankle in order to be fitted properly with braces and shoes for gait training

A simple but valuable procedure in the postoperative management of the paraplegic is early standing through the use of the tilt board With the use of this board, as soon as it is orthopedically safe, the complications caused by prolonged bed rest can be avoided and urinary complications minimized

In conclusion, with proper management from the time of injury, many of the complications frequently associated with traumatic paraplegia can be prevented or their effects mitigated

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THE Q Tc, AN AID TO THE DIAGNOSIS OF RHEUMATIC CARDITIS

GASPER A. GULOTTA *Cpt* USAF (MC)
 WESLEY L. PETERSON *Cpt* USAF (MC)
 ROBERT S. DANIELS, *Cpt* USAF (MC)

THE Q Tc (Q-T interval corrected or h) is the electrocardiographic measurement of the duration of the Q T interval corrected for heart rate

The Q T interval is measured from the beginning of the Q wave to the end of the T wave. There are several formulas for correcting the measured Q T interval for rate. The most commonly accepted is Bazett's formula. He related the measured Q T interval to the square root of the cycle length. This formula can be expressed as follows:

$$Q\ Tc\ (h) = \frac{Q\ T\ interval}{\sqrt{\text{cycle length}}}$$

FACTORS AFFECTING THE Q-Tc

The duration of the Q Tc is affected by many factors (table 1). Exercise and excitement have been shown by Taran and Szilagyi to prolong the Q Tc. This is particularly important in that falsely elevated determinations may be obtained. The electrocardiogram should be taken at basal conditions of physical and emotional rest.

Hypertension, congestive heart failure, heart enlargement, and myocardial infarction have been shown to prolong the Q-Tc. This has been explained by various authors on the increased length of the cardiac fibers and secondary inefficient oxygen consumption.

Tung studied 14 cases of massive tuberculous pericardial effusion and found that the Q-Tc was below the upper limits of normal. He concluded that this would be an important point in differentiating massive effusion from cardiac dilatation. Taran and Ordorico presented 13 cases of rheumatic pericarditis and

From U. S. Air Force Hospital, Ft. Belvoir, St. Louis, Mo.
 237 Jefferson St., Brooklyn, N. Y.

found that the Q Tc was within normal limits in 12 The Q Tc became prolonged after the initial episode of pericarditis cleared and the predominant manifestation was rheumatic carditis

TABLE 1 *Factors that affect the duration of the Q-Tc*

Types of factor	Prolonging Q-T	Shortening Q-Tc
Physiologic	Exercise Emotion	
Cardiac	Hypertension Congestive failure Heart block Rheumatic disease Intermittent conduction block Myocardial infarction Dysrhythmia	Pericarditis Prolonged P-R interval and A/V dissociation in rheumatic carditis
Drug therapy	Quinidine Emetine	Digoxin Strychnine Oxygen Cortisone
Metabolic	Hypocalcemia Hypokalemia	
Mitral disease	Illness due to poisoning Pulmonary embolism	

The literature on the usefulness of the Q Tc in rheumatic fever has been controversial. There is no unanimity of opinion on the technique of measurement, the selection of cases, and the upper limits of normal. The technique has included determining the Q Tc in lead II,⁹ in the lead with the highest T wave,¹ or obtaining an average of many leads.¹¹ The activity of the disease process in various group studies has been inconsistent. There is no agreement on the upper limits of normal.

Katz,¹² White and Mudd,¹³ and Dock¹ stated that the Q-Tc is of little or of no clinical value. Solomon and Zimmerman,¹⁴ Weinstein and associates,¹⁵ and Abrahams¹⁶ found evidence that the Q-Tc was prolonged in active rheumatic fever. Taran and Szilagyi¹ studied 50 normal children and 50 children with acute rheumatic carditis and found that there was almost complete correlation of a prolonged Q-Tc in the carditis group and of a normal Q-Tc in the control group. They also showed in another study¹⁷ of 123 patients followed for a period of one year and of an additional 17 patients followed for a period of four years that the

Q-Tc could be related to prognosis. The patients with greater prolongation of the Q-Tc elevated over the longest period of time developed increased valvular defects and progressive heart enlargement. Conversely patients with a Q-Tc that approached normal and in which the Q-Tc remained elevated for a shorter period of time developed little or no cardiac damage.

Digitis¹ has been found to shorten and quinidine to prolong the Q-Tc. Salicylate therapy, oxygen¹ and cortisone¹ effect the duration of the Q-Tc; therefore therapeutic measures must be considered in its evaluation.

The Q-Tc is modified by electrolyte imbalance particularly changes in the calcium and potassium levels. Hypocalcemia prolongs the Q-Tc and this may have clinical significance in unrecognized calcium deficiencies. The work of Bellet and Finkelstein on potassium deficiency was an important contribution. This has been particularly useful in the treatment of diabetic acidosis and coma.

Other conditions that can cause prolongation of the Q-Tc are intraventricular heart block,² emetine therapy,²² illuminating gas poisoning, pulmonary embolism, and the dying heart.¹

TECHNIC OF DETERMINING THE Q-Tc

Taran and Szilagyi have written several articles on the measurement of the Q-Tc. In these articles they stress important points in differentiating the diphasic T-T-U fusion, T-P fusion, and inverted U waves. The importance of taking numerous measurements in many leads is stressed. This is demonstrated in tables showing the margin of error in 3 cycle, 8 cycle, 12 cycle, and all cycles per minute determinations. It was concluded that the most practical method with an acceptable margin of error was a minimum measurement of six leads of six seconds each. The leads used in their study were I, II, III, aVR, aVL, and aVF.

MATERIALS AND METHODS

It was the purpose of this study to determine whether the Q-Tc had value as an aid in the diagnosis of rheumatic carditis in young men. We selected 25 normal airmen between the ages of 17 and 20 who had no past history of heart disease and in whom auscultation of the heart and roentgenograms of the chest were normal. These were used as controls. Electrocardiograms were obtained from 32 male patients with proved rheumatic disease of comparable age who fulfilled Jones' diagnostic criteria. Only electrocardiograms prior to therapy were used. The authors were aware of each diagnosis at the time of measurement. Because of the type of mathematical calculation involved, however, it is believed that the values obtained were not subjectively influenced.

We have interpreted only electrocardiograms taken on a string galvanometer and measured the Q T and R R intervals in six second lengths in leads 1, 2, 3, and V₁, V₄, and V₆ (total 36 seconds) The electrocardiograms were read with the aid of a magnifying glass and calipers A Sanborn electrocardiograph ("cardiette") powered by hand winding and battery was used The electrocardiographic machines were checked monthly for accuracy of timing

TABLE 2 *Ave age Q Tc in normal persons*

Patient	P R interval	Rate	Average Q-T	Average R R	Average Q-Tc
1	0 16	90	0 330	0 673	0 402
2	14	64	374	928	386
3	18	80	348	751	401
4	13	84	320	715	379
5	14	100	288	599	372
6	14	76	340	791	382
7	14	86	322	695	386
8	16	86	328	702	392
9	14	69	360	878	385
10	17	106	290	566	385
11	14	79	337	764	386
12	16	79	328	760	376
13	17	88	292	681	354
14	14	80	321	756	369
15	15	65	364	922	380
16	17	77	350	784	395
17	14	70	364	853	394
18	13	80	328	752	379
19	16	79	332	762	380
20	16	75	333	808	371
21	12	100	284	602	368
22	13	94	320	643	397
23	13	84	335	714	396
24	19	90	318	667	390
25	16	75	348	803	389
Average	0 15	85			0 384

RESULTS

The data obtained from the normal control group is summarized in table 2. The P R interval varied from 0.12 to 0.19 second (average 0.15) and the rate from 65 to 106 (average 85). The Q Tc ranged from 0.354 to 0.402 (average 0.384).

TABLE 3. A. g. Q-Tc. b. um. t. p. t. t.

P	P R interval	R	Average Q-T	Average R R	Average Q-T
1	0.15	75	0.376	0.803	0.420
2	.22	92	.384	.658	.470
3	.22	84	.380	.717	.447
4	.15	88	.348	.685	.424
5	.19	63	.424	.949	.436
6	.16	100	.356	.604	.458
7	.21	78	.386	.770	.440
8	.15	78	.362	.762	.415
9	.16	70	.376	.860	.406
10	.21	58	.408	1.030	.401
11	.20	85	.354	.725	.416
12	.20	76	.372	.797	.417
13	.19	90	.341	.665	.419
14	.18	128	.312	.470	.456
15	.18	68	.388	.880	.415
16	.22	88	.340	.678	.413
17	.18	99	.338	.605	.430
18	.12	93	.340	.645	.423
19	.18	104	.320	.579	.421
20	.20	75	.388	.826	.428
21	.20	92	.352	.646	.439
22	.18	100	.338	.605	.430
23	.17	52	.460	1.115	.440
24	.18	99	.336	.605	.432
25	.16	77	.390	.780	.441
Average	0.17	85			0.429

The data obtained from the rheumatic group (table 3) shows that the P R interval (excepting in those patients with a P R interval of 0.24 second or above) ranged from 0.12 to 0.25 second.

(average 0.17 second) The rate varied from 52 to 128 (average 85) and the Q-Tc ranged from 0.401 to 0.470 (average 0.429)

The data obtained from the rheumatic group with P-R prolongation of 0.24 second and above or with auricular ventricular dissociation is summarized in table 4. The P-R interval varied from 0.24 to 0.42 second (average 0.29 second), the rate varied from 63 to 98 (average 73), and the Q-Tc ranged from 0.383 to 0.417 (average 0.395)

TABLE 4 Average Q-Tc in rheumatic patients with P-R intervals of 0.24 second or above and with A/V dissociation

Patient	P-R interval	Rate	Average Q-T	Average RR	Average Q-Tc
1	0.31	68	0.364	0.883	0.386
2	A/V	86	0.328	0.695	0.394
3	0.42	70	0.368	0.860	0.383
4	0.24	98	0.308	0.610	0.394
5	0.24	64	0.404	0.934	0.417
6	0.24	63	0.394	0.950	0.404
7	A/V	68	0.365	0.872	0.390
Average	0.29	73			0.395

DISCUSSION

Comparison of the Q-Tc with the P-R interval in 32 patients with acute rheumatic fever is made in figure 1. In the seven patients with either auricular ventricular dissociation or a P-R interval of 0.24 second or over it was noted that five fell in the range below 0.400, one in the range 0.400 to 0.410, and one in the range above 0.410. It is our opinion that, in suspected rheumatic fever patients with these findings the Q-Tc is of doubtful value.

In figure 2 we have plotted the values of the Q-Tc obtained from an average of six leads in 25 normal controls and 25 rheumatic patients excluding the seven patients with auricular ventricular dissociation and P-R prolongation of 0.24 second and above. There was slight overlap in the range from 0.400 to 0.410. Most of the cases (92 percent of the controls and 92 percent of the rheumatic fever patients) fell outside this range. No person in the control group had a Q-Tc higher than 0.410 and no patient in the rheumatic fever group had a Q-Tc less than 0.400.

We have accepted 0.400 as the upper limits of normal for the Q-Tc in young adults. The range from 0.400 to 0.410 must be

considered equivocal. The presence of a Q Tc greater than 0.410 in a patient suspected of having acute rheumatic fever would seem to substantiate the clinical impression.

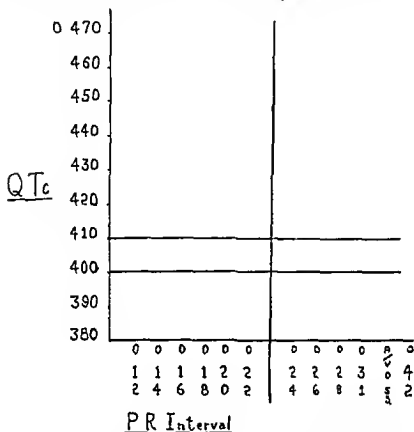


Figure 1. The Q-T compared with the P-R interval in acute rheumatic fever patients.

It is our opinion that the Q Tc is valuable as an aid in the diagnosis of rheumatic carditis in young adults when the following criteria are observed (1) The patient should be at basal conditions when the electrocardiogram is recorded (2) Photographic electrocardiograms rather than directly written electrocardiograms should be used (3) The Q T should be measured with the aid of magnifying glass and calipers in six leads of six seconds each and an average taken (4) Drug therapy, auricular ventricular dissociation, prolonged P R interval and pericarditis are factors which must be considered in evaluating the Q Tc.

SUMMARY

The Q Tc is the electrocardiographic measurement of the duration of the Q T interval corrected for rate.

The Q Tc was determined on the electrocardiogram prior to therapy in 32 patients with proved rheumatic fever and compared with the Q Tc obtained from 25 normal controls. It was found that 0.400 could be accepted as the upper limit of normal, 0.400 to 0.410 as equivocal and above 0.410 as prolonged. The presence of a Q Tc greater than 0.410 in a patient suspected of having acute rheumatic fever substantiates the clinical impression.

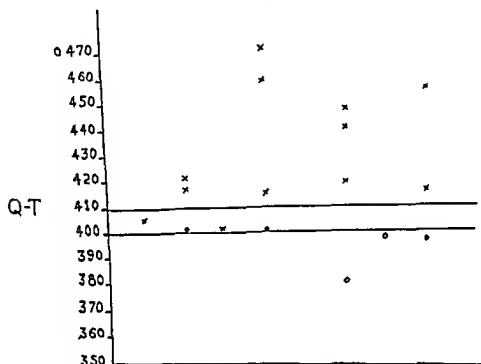


Fig. 2. Average Q_{TC} in normal persons (o) and rheumatic fever patients (x).

The Q-Tc in patients with proved rheumatic fever with a prolonged P-R interval (0.24 second or longer) or auricular ventricular dissociation was within normal or equivocal limits in six or seven instances.

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FRANKFORD ARSENAL RECEIVES HEALTH CERTIFICATE

Frankford Arsenal in Philadelphia one of the Army Ordnance Corps largest and strictest establishments was recently awarded the Certificate of Health Maintenance of the Occupational Health Institute for providing its employees with the best kind of constructive health service aimed at keeping workers well and cutting the incidence of accidents and disease. The certificate was presented to Brigadier General Joseph M. Colby USA the Commanding Officer by Dr. Glenn S. Evans regional consultant of the Occupational Health Institute which is a nonprofit organization. Dr. Laurence P. Develin is medical director of the arsenal.

COLD INJURY TREATMENT CENTER IN KOREA

Report of Operations During Winter of 1952-1953

JOHN W VESTER *First Lieutenant MC USA*
CARL N EKMAN *Lieutenant Colonel MC USA*

THROUGHOUT the history of warfare casualties resulting from exposure to extremes of environmental temperature have hampered the operation of armies in the field. The United Nations forces in Korea have added further chapters in the struggle to overcome these hazards.

The winter of 1950-1951, characterized by extreme operational difficulties due to the sudden onslaught of the Chinese communist forces, saw upwards of 5,000 injuries due to cold injury.¹ Only about 1,000 such injuries occurred in the winter of 1951-1952, because of a more stabilized tactical situation and an extensive cold weather injury program.² This program was continued during the winter of 1952-1953 and all components of the United Nations forces in the Eighth United States Army were directed to evacuate patients with cold injuries to this hospital which was designated as the Cold Injury Treatment Center. The single exception was the British Commonwealth division which elected to treat its own patients with cold injuries.

During the period covered by this report a total of 290 patients with cold injuries were reported from the Eighth United States Army and 46 from the Korean Communications Zone, making a total of 336 patients for all of Korea. This report concerns itself with an analysis of the 290 patients who were treated at this hospital. Detailed information for evaluation of the results of treatment of these patients is not available to us; however, it is believed that because the patients included in this article are almost entirely from combat units where opportunities for severe cold injuries are minimum, whereas those not included are mainly from support units, the exclusion of the latter group would not alter the impression that cold injuries in Korea during the winter of 1952-1953 were comparable with previous winters, had more been created in severity.

Because no surgical facilities were in operation at this hospital patients with cold injuries and major wounds or those requiring surgical intervention were routed through normal evacuation channels to units having surgical facilities.

All patients admitted to this hospital were graded as to distribution and degree of injury. When surgical intervention became necessary patients were evacuated. The remainder were treated according to precepts which have been discussed by Orr and Fainer. Patients were returned to duty with their units as soon as they were physically fit.

A total of 286 patients with cold injuries were admitted to this hospital between 3 December 1952 and 22 March 1953. Of these 286 patients 281 had frostbite that is actual freezing of the tissues resulting in local changes ranging from transient vasomotor phenomena to extensive necrosis. Five patients had trench foot that is deterioration of tissues caused by restriction of blood flow to the feet when exposed to moisture and cold.

CRITERIA

Grading of intensity of involvement followed classical divisions. (1) First-degree injury consists of transient vasomotor phenomena (i.e. ischemia followed by erythema and mild edema). Subjective sensations such as numbness, tingling, itching, burning, and occasionally aching pain of the affected part are observed. These signs and symptoms disappear within one week. (2) Second-degree injury is manifested by intensification of these signs and symptoms. In addition it is accompanied by the formation of vesicles that *do not* involve the entire thickness of the skin. (3) Third-degree injury shows involvement of the entire skin thickness and extends to varying depths into the subcutaneous tissues. (4) Fourth-degree injury produces damage to all tissues of the part including bone and results in loss of the part.

Data pertaining to the winters of 1950-1951 and 1951-1952 were obtained from the preventive medicine division of the surgeon's office, Eighth United States Army, Korea. Data pertaining to the winter of 1952-1953 were obtained by analysis of hospital records at this hospital.

DISTRIBUTION BY DEGREE OF INJURY

Of about 5,000 patients observed during the winter of 1950-1951, the great majority had second- and third-degree injuries, but a considerable number showed fourth-degree injuries (table 1). Severe involvement resulted in few amputations but prolonged hospitalizations. Of the 1,010 patients observed during the winter of 1951-1952, only about one-fourth had third- and fourth-degree injuries. Thus, with a great decrease in total incidence there was also a pronounced trend toward less severe involvement.

(table 1) Of the 286 patients with cold injuries admitted to the Cold Injury Treatment Center during the winter of 1952-1953, almost two thirds had first-degree and one fourth had second-degree injuries (table 1). The fact that the vast majority of these injuries were first and second degrees reflected great improvement in measures for the prevention of cold weather injuries.

TABLE 1 Distribution of patients with cold injuries by degree of involvement (1951 to 1953)

Year	Number of patients	Degree of injury (percent of patients)			
		1	2	3	4
1950-1951	5 000	16.7	33.6	43.6	6.1
1951-1952	1 010	32.7	36.6	20.1	4.6
1952-1953	286	62.3	27.0	9.6	1.1

Observed at the Cold Injury Treatment Center.

TABLE 2 Incidence of frostbite by month and degree of involvement

Month	Number of patients	Degree of involvement			
		1	2	3	4
December 1952	153	109	29	13	2
January 1953	78	38	30	10	0
February 1953	46	27	16	3	0
March 1953	4	1	1	1	1
Total	281	175	76	27	3

One of the factors involved was a well stabilized tactical situation permitting better housing and supply of troops as well as a more vigorous enforcement of measures which each soldier could take to avoid becoming a cold weather casualty. These measures include the wearing of sufficient clothing to keep the body warm but at the same time to avoid overheating with resultant moisture due to perspiration, avoiding prolonged exposure of unprotected skin surfaces to extreme cold, keeping the feet clean, dry and as warm as possible, and stimulating the circulation to the extremities by exercise or massage at frequent intervals and eliminating all restrictions which retard the circulation. In addition, commanding officers need to make certain that sufficient clothing, including special items such as the insulated rubber combat boot

developed by the Quartermaster Corps warming enclosures and clean dry socks are available to enable their personnel to carry out this program

DISPOSITION

REGION INVOLVED

DISTRIBUTION



Figure 1 Statistical distribution of 175 patients with frostbite during the winter of 1952-1953

DISPOSITION

REGION INVOLVED

DISTRIBUTION



Figure 2 Statistical distribution of 76 patients with frostbite during the winter of 1952-1953

REGION INVOLVED AND DISPOSITION

Table 2, a breakdown of degree of involvement by months during the winter, reveals that the greatest total incidence of all types of injury except that of the second degree was at its peak during the first month in which cold injuries occurred. The decrease in incidence as the winter progressed may well have been due to an increased enforcement of cold weather discipline.

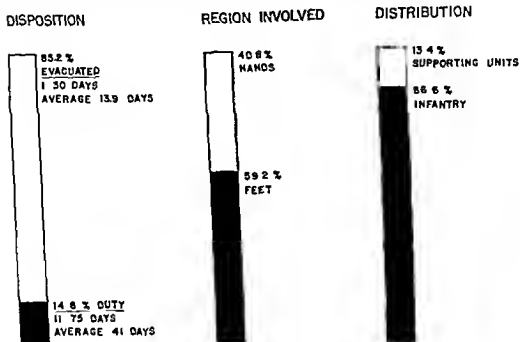


Figure 3 Statistical distribution of 27 patients with third degree frostbite during the winter of 1952-1953

Figures 1, 2, and 3 graphically present the final disposition, the body region most severely involved, and distribution by activity of patients with first-, second- and third-degree frostbite observed in the winter of 1952-1953. The term "evacuation," as here employed, means transfer to another medical installation for surgical intervention or for prolonged hospitalization. The term "duty" indicates that it was possible to return these patients to their unit with a temporary "3" profile, pending reevaluation at a later date. No exact data are available, but it is our belief that patrol duty was the tactical activity which gave rise to the highest incidence of cold weather injury.

Fortunately, only three patients with fourth-degree injury were observed, and all were evacuated for surgical treatment within two, 10, and 22 days.

Seventy-four patients were admitted to this hospital in the winter of 1952-1953 with the diagnosis of frostbite which was not substantiated. Over 60 of these were classified as unconfirmed.

frostbite and quickly returned to duty. The rest had miscellaneous conditions including Raynaud's syndrome, acrocyanosis, and skin affections due to improper use of cold-weather gear. Only three were transferred to psychiatric installations for evaluation of emotional aberrations motivating the formation of their symptoms.

TREATMENT

The treatment of these patients was essentially conservative. The basic plan for management included exposure of the affected part to air at room temperature, control of secondary infection, and prophylaxis against tetanus by a booster injection of tetanus toxoid. Vesicles were allowed to rupture spontaneously and debrided when necessary. As soon as feasible, rehabilitation by active and passive exercise was begun so that soldiers could return to duty with a minimum loss of time.

CONCLUSIONS

The data herein presented demonstrate a tremendous decrease in incidence and severity of cold-weather injuries in Korea. Factors contributing to this change included tactical stabilization with attendant improvement in troop shelter and supply, rigid cold-weather discipline, and use of improved cold-weather gear developed by the Quartermaster Corps. Conservative methods of management resulted in return to duty with minimum time loss of the majority of the patients.

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ACUTE RENAL FAILURE

We do not yet know with certainty how the lesions of acute nephroses are produced nor have we clarified understanding of the mechanism by which anuria results. The patient who develops acute renal failure is clearly in a state of extremely complex physiologic derangement. It is difficult (perhaps impossible) to reproduce this state exactly in experiment. I am of the opinion that metabolic adjustments may be made in quite different ways for members of the human

—DOUGLAS WAUGH, M. D., M. S., Ph. D.

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DIAGNOSIS AND MANAGEMENT OF EPILEPSY IN THE MILITARY SERVICE

RICHARD J MAHER *Lieutenant (MC) USNR*

IN THE diagnosis and management of epilepsy in the military setting certain factors such as motivation, evacuation of patients long distances for study, and eligibility for return to duty are of considerable import, and create problems usually not encountered by civilian physicians

DIAGNOSIS

The history should be elicited both from the patient and from those who witnessed his seizure. The patient should be questioned concerning aura, seizure, and postconvulsive phenomena. Frequently the aura is either nonexistent or forgotten. There should be no recollection of the actual seizure. It is pertinent to establish this point carefully with service personnel, for if they remember details of their convulsions, they likely are having hysterical rather than epileptiform seizures. Often, feelings and actions during an hysterical fit can be described, but complete amnesia for an epileptiform seizure is typical. Postconvulsive data may also provide diagnostic clues. Was the patient soiled when he awoke? Did he injure himself in any way? Were his muscles sore and stiff the next day?

The examiner should determine the alcoholic intake and the emotional status prior to the convulsion. Alcohol lowers resistance to seizures, and its use often precedes the first convulsion in military personnel. Less well appreciated is the tendency for emotional disturbance to trigger seizures. Tension and anxiety do not seem as important in their production as do hostile and resentful feelings which the patient is unable to relieve. For example, one of our patients was hospitalized because of seizures that occurred three or four times a year. His attitude during hospitalization, which was against his wishes, was extremely immature and resentful because he was not allowed to return to duty. When military discipline forced him to face this reality, his response was to have two dozen seizures in less than a month. Another patient though making an adequate service adjustment,

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had been smoldering inwardly for two weeks prior to his only seizure because his parents had refused to send him his savings to invest somewhat foolishly in a new car.

A past history of head injury, meningitis, petit mal epilepsy or venereal disease is important as is a family history of convulsions.

Usually the most significant information is obtained from witnesses of the seizure. This is especially important in the military service because a patient may be hospitalized for study thousands of miles from the site of his convulsion and from eye witnesses. If the medical officer of the remote station or ship records all pertinent information derived from a face-to-face interview with an eyewitness, he will perform what is perhaps the most important diagnostic study in the patient's work up. Neglecting the collection of this information is the most serious handicap in referral of patients hospitalized for study.

The physical examination is usually negative in idiopathic epilepsy. It should be painstakingly performed, however, to rule out local neurologic signs, carotid sinus sensitivity, hypocalcemia and sources of brain emboli such as rheumatic heart disease. Psychiatric evaluation is essential. The immature, hostile young draftee may well have hysterical seizures. On the other hand, convulsions occurring in a well-adjusted person whose history is free of enuresis, poor school adjustment, family divorce and alcoholism, service disciplinary offenses and the like are more apt to be true epileptiform seizures.

Laboratory studies should include in all cases a lumbar puncture, roentgenograms of the skull and an electroencephalogram. The child with a febrile convulsion who does not have a lumbar puncture may return 24 hours later with unmistakable signs of meningitis. The adult in whom roentgenograms of the skull are not made may have a meningioma that is obvious on roentgenographic studies. Regarding the electroencephalogram, it is important to remember that a routine tracing without hyperventilation, metrazol and photic or other stimuli may be negative in epilepsy. Even with stimulation about 20 percent of epileptics will have negative electroencephalograms at the onset of their seizures.

MANAGEMENT

In the management of the acute seizure the physician has certain obligations:

1. Prevention of injury to the patient.

2 Avoidance of panic among bystanders Witnesses should be assured that all is under control and should be dispersed after it is determined that they will be available later for questioning

3 Observation of the seizure and postconvulsive state Localized seizure discharges may be manifested by deviation of the head to one side, onset of seizures on one side, and so on One should determine if the convulsion is hysterical in nature, sensitivity to pain, hyperventilation, bizarre and aggressive behavior, or quick recovery and usual concomitants of emotional fits

4 Treatment of contributing factors, for example, in febrile convulsions and seizures secondary to acute nephritis, or toxemia of pregnancy

5 Anticonvulsant medication This need be given only to the patient in status epilepticus

LONG-TERM TREATMENT

Which patient should receive long term treatment? One seizure does not make this mandatory but the serviceman should be observed for further difficulty before a final diagnosis of epilepsy is made and long term treatment recommended The drugs of choice for grand mal epilepsy are diphenylhydantoin sodium (dilantin sodium) and phenobarbital They may be given together if seizures are frequent With infrequent seizures either drug can be started alone Toxic effects of diphenylhydantoin sodium include hirsutism, gum changes, gastric irritation, dermatitis, and cerebellar signs Medication should be given after meals to avoid gastric difficulty Daily gum massage is recommended The skin and cerebellar signs will frequently clear up if medication is stopped for several days and then resumed

An important point to remember with diphenylhydantoin sodium is that it has a cumulative action For this reason it is not used alone for the emergency treatment of status epilepticus and doses omitted because of forgetfulness during long term treatment should be made up Phenobarbital, on the other hand, works rather quickly It can be given at times of the day during which most patients are more susceptible to seizure, for example at bedtime It is probable that many epileptics can tolerate a moderate intake of alcohol, but complete abstinence is a safer course Emotionally disturbing circumstances should be avoided if this is possible in our troubled era Car driving, swimming alone, climbing heights, and other obviously dangerous activities are contraindicated Treatment may be withdrawn slowly after three years of seizure free therapy

A most important consideration in treatment is careful indoctrination of the patient in the rudiments of his disease. The physician should be both optimistic and realistic in his explanations. Much can be done by giving the patient literature suitable for lay consumption. It is often helpful to introduce the patient to a well-controlled epileptic who has made an adequate emotional adjustment to his disorder. A long-term plan should be outlined to the patient, making it clear to him that he must continue taking medication for years rather than for days or weeks. He should be encouraged to ventilate his feelings concerning his disease so that prejudices and undue fears can be allayed. Patients are frequently relieved to find that deterioration in the well-treated epileptic is uncommon and that the chances of his children developing epilepsy are slim if he marries a non-epileptic.

Many errors occur in the treatment of status epilepticus, the most frequent of which is the repeated administration of large doses of barbiturates to the point of intoxication. Recommended management is the intravenous administration of 0.2 gram of phenobarbital sodium repeated at 20-minute intervals for three doses. If that fails, ether by drop may be started. It is important to treat contributing causes in status epilepticus, such as fever in febrile convulsions.

Surgical treatment is mandatory in cases of brain tumor or subdural hematoma. Surgical intervention may also be advisable in posttraumatic epilepsy if the diagnosis is supported by clinical electroencephalographic and air studies if seizures are focal and if a medical regimen has failed to control the seizures. Operation should be considered only when there are excellent facilities available.

What should be done about the epileptic in military service? It is best to adopt the rule that no epileptic should be retained in service. There will be occasional rare instances, however, in which individualized exceptions can be made to this rule.

SUMMARY

In outlining the diagnosis and management of epilepsy, several useful points of procedure have been emphasized, including the careful questioning of eyewitnesses and recording of all pertinent data, the distinguishing of conversion seizures in military personnel from true epileptiform seizures, and the education of the patient in how to live with his disease.

ABDOMINAL PREGNANCY

A Review and Case Report

HOWARD HORNER *Captain, MC USA*
HAROLD E. HARRISON *Colonel MC USA*

ABDOMINAL pregnancy is one of the most interesting but, unfortunately, one of the most hazardous complications of pregnancy although rare, it must be kept in mind, otherwise correct diagnosis will frequently be missed. Torpin¹ stated that the presence of vaginal spotting and unexplained abdominal pain in a pregnant woman should suffice to put the clinician on guard and a pregnancy with those signs should be considered extra uterine unless proved otherwise.

An abdominal pregnancy can be either primary or secondary, the latter being the usual.² Studdiford³ reported a case of primary abdominal pregnancy in 1942 which was well documented. A similar case reported by Bourgeois fulfilled the criteria of primary abdominal pregnancy as outlined by Best,⁴ however, most of the cases of abdominal pregnancy, Latzko's⁵ opinion to the contrary, are secondary to a tubal pregnancy which either ruptured or aborted spontaneously into the free peritoneal cavity.⁶ Usually after tubal rupture has occurred, there will not be a complete separation of the trophoblastic attachment, but rather a slow extension through the defect of the tubal wall with implantation over the surrounding peritoneal or visceral surfaces. Sometimes there is complete abortion of the ovum and de novo implantation. Only this mechanism can explain the remote locations where abdominal pregnancies have been found. One of the most unusual sites of an abdominal pregnancy, and the only one of its kind described in the literature, was in a patient, reported by Hushner and Dobrzynski,⁷ in whom the placenta in its entirety, was attached to the spleen.

The incidence of abdominal pregnancy has been variously quoted. Cross and associates⁸ of Atlanta, Ga., reported 19 cases in 41,941 deliveries, or an incidence of one in 2,207. Bowen,⁹ of French Hospital New York, N. Y., reported an incidence of one in 17,173 which concurs with Eastman's¹⁰ figure of one in 15,000, Douglass and Kohn's¹¹ estimate of one in 16,000, and Quilliam's¹² estimate of one in 12,500. Barrett¹³ added five cases seen at

From Medical Service, Army Hospital, Fort Meade, Md. Received for publication June 1, 1947. Dr. Hushner is now at Dr. Ve
Los Angeles, Calif.

the Decatur General Hospital in Decatur Ala to two cases previously reported by Burleson and Bragg¹ from the same institution making the unusual incidence of abdominal pregnancy at that hospital in the period from 1947 to 1952 of one in 286 deliveries

Because abdominal pregnancy is usually a sequel to a tubal pregnancy and because the incidence of extra uterine gestations is much more common in Negroes it is not surprising to find late extra uterine gestations to occur predominantly in them. According to Douglass and Kohn the incidence ratio of Negro to white is 16 to one. Bates and Vabors reported 107 extra uterine pregnancies including eight abdominal pregnancies of which 76 per cent were in Negroes. Hazlett² reported a rare case of a repeated abdominal pregnancy in a young Negro patient who carried both pregnancies to term. In contrast Lester and associates reported a second abdominal pregnancy in a white patient with an associated uterus bicornis unicollis. Since the Fallopian tubes at laparotomy appeared relatively free of pathologic changes they believed this might possibly be a primary abdominal pregnancy.

It cannot be overemphasized that a carefully taken history is one of the most important diagnostic aids. A thorough interrogation of the patient concerning the character of her last normal menstrual period comparing it with previous periods will reveal the fact that it actually was not a normal period at all as the patient had presumed but was vaginal bleeding associated with an ectopic pregnancy. This plus pelvic or lower abdominal pain which usually is the presenting complaint should put the clinician on the alert. Because there is considerable peritoneal irritation the patient will frequently consult the doctor for a multiplicity of vague complaints which at first might seem to have no relationship to the gestation. In addition to abdominal pain the patient may complain of nausea and vomiting, flatulence, constipation and diarrhea to a varying degree and urinary difficulties. Later in pregnancy fetal movements may be very painful.

On physical examination the finding of a definite displacement of the cervix is an important sign that the pregnancy is abnormal. Other helpful findings are the presence of a high or transverse position of the fetus, evidence of fetal death, the presence of an extra uterine mass, inability to ballot the fetus, failure of cervical effacement and dilatation, episodes of spurious labor and asymmetric abdominal enlargement. Murless and associates believed that the status of the cervix with its high position and failure to efface and dilate with false labor is of great significance. According to Cross and associates the other diagnostic criteria which are often mentioned but which have been of little

help to them in arriving at a correct diagnosis are the following: abdominal crisis early in pregnancy, palpation of superficial fetal parts, unusually loud fetal heart tones, inability to palpate the round ligaments, inability to palpate Braxton Hicks contractions, and proof that the uterus is empty by probing, and, finally, by hysterograms.

Lazard,²⁰ and Vilalta²¹ believed that the use of contrast media is of considerable aid in confirming the diagnosis once the clinician's suspicion has been aroused. For this reason this procedure has been used in the patient to be reported.

Certain laboratory and diagnostic tests are of help. Colvin and McCord²² described the use of pituitary extract to identify an abdominal mass as separate from the uterus. A small amount of pituitary extract is injected subcutaneously while a bimanual examination is performed. A firmly contracted and thus easily recognizable uterus will permit the identification of any other extra-uterine abdominal tumor. Although well conceived, in practice this test is not easily carried out. Roentgenograms may reveal signs which may be of help in the diagnosis of abdominal pregnancy, although none are pathognomonic. In the case to be presented the roentgenologic diagnosis was questionable. The following criteria are looked for: (1) abnormal position of the fetus, (2) presence of a pelvic mass, (3) a uterine shadow, (4) fetal parts visualized immediately beneath the abdominal wall, and (5) absence of uterine shadow around the fetus. Frequently the latter finding is absent because the fetal sac usually has attained such thickness that on a roentgenogram it will commonly mimic the uterine outline about the fetus.²³ Even with the most carefully taken history and physical examination, aided by laboratory studies, the condition was diagnosed correctly before operation in only 35 percent of the patients reviewed by Cornell and Lash.²⁴

Fetal salvage in abdominal pregnancy is extremely poor. In a review of abdominal pregnancies reported by Beacham and Beacham² in 1946 the fetal mortality was 85 percent. Were²⁵ analyzed 247 cases of extra-uterine pregnancy found in the literature from 1933 to 1946. There were 251 infants in his series, of whom 140 died undelivered and 50 within the immediate neonatal period, giving a total fetal mortality of 75.6 percent. Some investigators, such as von Winckel,²⁷ Bland and Montgomery,²⁸ and Eastman,¹¹ also believed that these infants show a greater incidence of congenital malformations than normal intra-uterine gestations. According to Mahfouz, however, the fetuses in his series that advanced to term showed little or no abnormality, whereas some of those that died at an early age showed marked

malformations. There are occasional single case reports wherein an abdominal pregnancy terminated in a live child, a fact which only serves to emphasize the rare occurrence of this outcome.

Tubal abortion usually results in an absorption of the fetus; however, once the fetus continues to grow as an abdominal pregnancy and reaches a certain size, absorption does not occur but rather one of the following four alternates takes place: (1) suppuration, (2) mummification, (3) calcification, (4) adipocere formation. Not taking into account the rare case that is delivered as a full term pregnancy, alive or recently dead. Because the gestation sac is in close contact with the intestines, there is frequently penetration of the former by pyogenic organisms. The resulting suppuration causes abscess formation which may rupture intraperitoneally, usually into the intestines, or extraperitoneally through the abdominal wall. In the case to be presented, had laparotomy not been decided on, perforation would surely have occurred through the abdominal wall. Mummification and calcification might have ensued. The literature contains numerous instances of a lithopedion being retained from 20 to 30 years before it was ultimately found at operation or autopsy.

Surgical intervention is the treatment of abdominal pregnancy, the only question being when to operate. The prime reason for delay of operation is to decrease the amount of hemorrhage at time of definitive surgery. Contraction and retraction of the uterine musculature causes obliteration and occlusion of the large sinuses and hypertrophied blood vessels at the site of separation of a normally implanted uterine placenta. This mechanism is absent in abdominal pregnancy where nidation is on the bowel or other visceral organs. Following fetal death, however, there is progressive diminution of the placental circulation with thrombosis and infarction and resultant decrease in vascularity and danger of hemorrhage. Therefore some surgeons believe that an operation should be delayed in the hope that massive hemorrhages which so frequently occur at laparotomy might be prevented. Thus Champion and Tessitore believed that after the fetus is dead the operation should be delayed six to eight weeks until the placental circulation has atrophied. DeLee suggested deferment for seven to 90 days for the same reason and Lull postulated that if the patient's condition permits it three to four weeks should be allowed to elapse before laparotomy, always assuming the fetus is dead when the patient is first seen. However, Eastman Ware and others maintained that nothing can be gained by waiting and believed that surgical interference is indicated once the diagnosis is made. Moreover, Tenneau and Cross and associates pointed out that this delay might actually

panies that condition. In Ware's series of 13 late extra uterine pregnancies it was 30.76 percent and in the 249 cases he found in the literature since 1933 and which included his 13 cases it was 14.85 percent. Cornoll and Lash reported a 14.3 percent maternal mortality rate half of which was due to shock alone. Peritonitis, intestinal obstruction, toxemia, pyelonephritis and a miscellaneous group accounted for the other 50 percent. In Jarcho's series the death rate was 11.1 percent. Bland and Montgomery reported a 34.7 percent maternal mortality rate for 240 cases of late extra uterine pregnancy found in the literature from 1813 to 1907 while it dropped to 16.7 percent for 61 cases collected from 1907 to 1923.

CASE REPORT

A 30 year old Japanese woman, gravida 2 para 0 abortion 1 was admitted to the gynecologic service of this hospital on 30 October 1952 because of the presence of an intra abdominal mass.

Present Illness. The patient's last normal menstrual period was 8 September 1951 and her estimated date of confinement 15 June 1952. On 25 September 1951 the patient developed severe lower abdominal pains which were relieved by a shot given by a physician. On 3 October 1951 a dilatation and curettage was performed without bleeding or removal of any products of conception (details unknown since records were not available). One week later the patient developed a foul vaginal discharge although she had been receiving 300,000 units of penicillin daily. On 20 October 1951 treatment was begun by another physician. The patient received fluids intravenously, five blood transfusions and penicillin. She improved and during the next two months was examined every two weeks and was advised she still had the baby and that the pregnancy was progressing satisfactorily. She continued however to have frequent right-sided abdominal pains and occasional vaginal spotting. By January 1952 there was no further vaginal bleeding but the patient complained of frequent gastrointestinal disturbances. In March 1952 she came to the United States. She reported to an Army general hospital in 1952 and was followed in the prenatal clinic. Adequate records are available only from this time on. On 10 May 1952 she developed severe pain in the left lower side of her abdomen with radiation to the right side. She was told she had a kidney infection and was hospitalized for four days and was given fluids intravenously and antibiotics. On 23 May she developed "high fever" and severe lumbar pain and at this time noted no further fetal movements. She was told the fetus was not alive and that she would have to wait for spontaneous onset of labor.

There was some bleeding in June 1952, at which time roentgenograms confirmed fetal death. She was repeatedly informed that she must await spontaneous delivery and that no operation was indicated. On 26 September 1952 she started a normal period which lasted five days and then had another normal period on 26 October 1952. In October 1952 the patient's husband was transferred to the Pacific Northwest and the patient came to this hospital for evaluation.

Past History The patient had been pregnant three years before the present pregnancy, but had aborted at four months. She had six blood transfusions in November 1950 because of vaginal bleeding. The entire history is not reliable because of the language barrier and inability to obtain old records.

Physical Examination General physical examination findings were within normal limits, revealing a well-developed, well-nourished woman in no acute distress. The abdomen was enlarged by a tumor mass the size of a seven months' gestation. No fetal activity could be elicited and fetal heart tones were not audible. The mass was semisolid and only one fetal part was palpable. The external genitalia was normal and Bartholin and Skenes' glands were not palpable. The vagina contained a red brown mucus. The cervix had a stellate laceration with evidence of a chronic cervicitis, but it was not displaced. The uterus was difficult to palpate, but was thought to be lying immediately anterior to the cervix, anteflexed against the anterior vaginal wall. It was about one and one half times the normal size and fixed in position. A large, fixed tumor mass seemed to arise from the right adnexa and was compatible in size with a pregnancy of seven months. Neither ovary could be felt. The impression on admission was that the patient had an extra uterine pregnancy with fetal death and possible mummification or calcification of the fetus. It was postulated that the September 1951 episode represented rupture of an ectopic tubal pregnancy with secondary implantation of the placenta and continued fetal growth to a period of seven months gestation, then fetal death and culmination in the present picture.

Laboratory Studies Routine laboratory determinations were found to be within normal limits except for an elevated erythrocyte sedimentation rate. Roentgenograms of the abdomen revealed a fetus, but it was thought to be intra uterine. A gastrointestinal series was noncontributory. Because of the strong clinical impression of an abdominal pregnancy, a hysterosalpingogram was done on 5 November with great difficulty, producing severe pain when the dye was injected. Review of the films was not conclusive, but they were interpreted as probably showing an extra uterine pregnancy. The patient developed a

reaction to the dye used. It responded to the administration of epinephrine and diphenhydramine hydrochloride (benadryl hydrochloride).

Course in the Hospital Following the laboratory procedures outlined above the patient developed a severe infection of the products of gestation beginning on 6 November 1952 with temperature spiking to 101 to 102 for the next 14 days. Blood, cervical urine and stool cultures were all negative for pathogens. The patient was maintained on massive doses of antibiotics. Her condition however became progressively worse with increased toxicity and on 18 November 1952 a tender indurated mass, which had increased in size and was thought to be an abscess, was felt beneath the umbilicus. Roentgenograms revealed gas about the fetus. The patient was seen in consultation and it was believed that she had a ruptured uterus with development of an intra uterine abscess. On 18 November 1952 under spinal anesthesia an exploratory laparotomy was done.

An infected pregnancy within an abscess cavity was found. Because of marked adhesions, necrosis and inflammatory reaction it could not be absolutely determined at operation whether the uterus was separate from this mass or simply involved by contiguity. The abscess wall was found to be adherent to the right anterior abdominal wall, appendix, caecum, transversa colon, sigmoid and descending colon. The adhesions were freed with considerable difficulty after the mass itself had ruptured and about 1,000 cc of foul gray pus evacuated. The fetus was found to be macerated and was removed separately. With great technical difficulty a total hysterectomy and right salpingo-oophorectomy was performed. The vaginal cuff was left open for drainage. The patient received 2,000 cc of whole blood during the operation and 1,000 cc of dextrose. A careful dissection of the surgical specimen confirmed the original clinical impression of an abdominal pregnancy, probably secondary to a tubal abortion with placental implantation on the fimbriated end of the Fallopian tube.

PATHOLOGY REPORT

Gross Pathologic Examination The specimen consisted of a uterus, cervix, tube, ovary and a fetus. The cervix measured four centimeters in length and averaged 2.7 centimeters in diameter. The smooth epithelium of the external portion of the cervix was present in one area.

The recognized portions of the uterus measured 6 by 7 by 4.5 centimeters. Attached to the uterus was a very large sacculation and it could not be determined whether this large sacculation, which measured about 20 centimeters in length by 18 centimeters

in diameter, represented a part of an abnormally formed uterus or a greatly dilated Fallopian tube. The endometrial cavity showed no abnormal communications and the endometrium was relatively inactive, averaging 3 mm in thickness. The serosal surface of the uterus and this sacculaton showed many fibrous adhesions. The sacculaton housed a fetus, fibrinated material, and a placenta.

What apparently was a Fallopian tube was recognized on the external walls of the sacculaton. It measured 11 centimeters in length, up to one centimeter in diameter and the lumen was probed. Its fibrinated extremity was not recognized and a communication between this tube and the sacculaton was not recognized.

An ovary, 4.5 by 3 by 1.5 centimeters in dimension, was situated in the wall of the sacculaton. Its cut surface showed old corpora lutea and tiny noncystic structures. The sacculaton proper had a fibrous type wall, and the interior was ragged and covered with fibrinous purulent exudate. The placenta, of an estimated diameter of 13 centimeters, varied in thickness up to 3 centimeters, and was very degenerated.

The fetus was that of a female measuring 40 centimeters from crown to heel and 28 centimeters from crown to rump. A macerated portion of cord attached to umbilicus measured 33 centimeters. The maceration was extreme and sections were not taken.

Microscopic Examination. The sacculaton showed smooth muscle layered in two planes with the cells oriented at 90° to each other from one plane to another. One area showed a small span of columnar epithelium where fibrosis and exudate had not obliterated detail. There was much infiltration with plasma cells and lymphocytes and the bulk of the lining surface was necrotic. An area of luteinized stroma was noted. This stroma was not remarkable except for one area which abutted on the lining of the sacculaton, and here fibrosis and exudate, as noted above, were present. The section of the body of the uterus showed the endometrium to be relatively shallow, the stroma compact and the glands relatively straight and lined by simple columnar epithelium with little evidence of secretory activity. Decidual cells were not present. The myometrium and serosa were not remarkable in these sections. The sections of the Fallopian tube showed considerable exudate of plasma cells and lymphocytes in the stroma under the low columnar epithelium lining the tube. The musculature of the tube was somewhat infiltrated as was the serosa to a lesser extent. Cervical sections showed an essentially normal appearing stratified squamous epithelium and columnar epithelium. The glands likewise were not remarkable. The stroma was infiltrated with lymphocytes, especially

under the epithelial surface and about the glands. The placenta was necrotic hyalinized and infiltrated with polymorphonuclear leukocytes lymphocytes and plasma cells. Decidual cells were not recognized. The sections of round ligament depicted a normal appearing structure.

The diagnosis was extra uterine infected pregnancy on the Fallopian tube fimbriated extremity chronic salpingitis chronic oöphoritis chronic cervicitis.

POSTOPERATIVE COURSE

The patient's immediate general postoperative condition was remarkably good. She was given streptomycin penicillin fluids intravenously and continuous gastrointestinal decompression using a Miller Abbott tube with Wangenstein suction. On 27 November 1952 (ninth postoperative day) the nasal end of the tube was inadvertently cut before the tube had passed the large bowel. Although it was anticipated that the tube would pass spontaneously per rectum there was no progression for the next 48 hours as evidenced by roentgenograms. Instead the patient developed a partial intermittent intestinal obstruction secondary to a coiling up of the Miller Abbott tube and on 29 November another laparotomy was performed. The coiled tube was found in a loop of the ileum which was distended proximal to the point of obstruction.

The patient tolerated the operation well and was returned to the ward in good condition. She was given penicillin but developed a generalized urticaria and the penicillin was discontinued. She was then given oxytetracycline (terramycin) intravenously. Decompression was accomplished by a second Miller Abbott tube which was left in for six days. After removal of the tube normal bowel function returned and she tolerated oral feedings well. She developed multiple superficial wound abscesses which had to be opened. After packing of the wound with plasma oxytetracycline paste satisfactory granulation developed. She was discharged on 5 January 1953 asymptomatic and feeling well the abdominal wound showing almost complete granulation. Pelvic examination before discharge disclosed the vaginal vault to be granulating well. A large indurated mass was felt extending from the cuff to the right lateral pelvic wall. When seen in the clinic three weeks later there was considerable resolution of this area of induration and much less tenderness.

SUMMARY

Abdominal pregnancies can be either primary or secondary most are secondary and are usually a sequela of tubal pregnancy. The majority of abdominal pregnancies are observed in Negro patients. Clinical aids in diagnosing this condition in-

clude a carefully taken history, evidence of vaginal bleeding and pelvic pain, displacement of the cervix, and the presence of an extra uterine mass. The pituitary extract test and roentgenograms are also of use in diagnosis.

Maternal mortality in abdominal pregnancy is reported to be from 15 to 30 percent and fetal mortality from 75 to 85 percent. Surgical intervention is the treatment of this condition, but because of the dangers of massive hemorrhage the optimum time for operation is a matter of controversy.

In the patient presented herein, an exploratory laparotomy about 14 months after conception and about six months after death of the fetus revealed an infected pregnancy within an abscess cavity. Because the maceration of the products of conception had involved the uterus, cervix, and right tube and ovary, total hysterectomy and right salpingo-oophorectomy were performed. We believe that this is a case of rupture of an ectopic tubal pregnancy with secondary implantation of the placenta and continued fetal growth to a seven months gestation then fetal death.

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MITRAL COMMISSUROTOMY

SANFORD W FRENCH III *Colonel MC USA*
THOMAS H HEWLETT *Lieutenant Colonel MC USA*

BLAND¹ credited Billroth with the sage observation in 1883, "let no man who hopes to retain the respect of his medical brethren dare to operate on the human heart." Yet as early as 1876 Klebs² had demonstrated an approach to the mitral valve in animals, and Rehn³ not heeding Billroth's advice, successfully sutured a wound of the heart in 1897. The turn of the century saw a slow steady development of interest in cardiac surgery. Brunton in 1902 suggested but did not use the present-day approach to the mitral valve. This suggestion brought severe criticism from his colleagues. McCallum and McClune⁴ in 1906 took the mitral problem to the laboratory and attempted to produce mitral stenosis and insufficiency in animals. Cushing and Branch⁵ in 1908 reported experimental work on chronic valvular lesions and discussed the relation of their experience to further valvular surgery. Bernheim⁶ and Schepelmann⁷ described their animal experiments in mitral valve surgery in 1912. Doyen⁸ in 1913 performed the first transventricular pulmonary valvulotomy on a 20 year old woman who died several hours after the operation. This same year Tuffier⁹ dilated the pulmonary valve through an invaginated pulmonary artery. This patient survived 10 years and was considered improved following the operation.

Cutler and Levine in 1923 passed a tenotome through the left ventricle and attempted to incise the mitral valve cusps. This patient survived four and one half years, and at death an autopsy revealed that the diameter of the mitral valve was 4 cm. This first successful valvulotomy had increased the valvular diameter, but the principles described by Brunton had not been followed. In the light of present knowledge it must be assumed that this patient undoubtedly had a postvalvulotomy mitral insufficiency. Souttar¹² in 1925 approached the mitral valve with the finger through the left auricular appendage. The patient survived but Souttar's colleagues were not impressed by the procedure and did not send him more patients for treatment. In all, 10 patients with mitral stenosis were subjected to operation in the third decade of the twentieth century with a discouraging mortality rate of 80 percent.

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After experimental studies, Bailey¹³ in 1945 did a transapical mitral valvulotomy dividing the commissure with a valvulotome. Although this patient did not survive, a successful valvulotomy was reported by Harken and others in 1948.

An alternate method of attack on the problem of mitral stenosis was suggested by Bland and others in 1948. This method made use of a shunt between the azygos vein and the cardiac end of one of the right pulmonary veins. Such a shunt routinely, blood from the pulmonary to the systemic circuit produced a relief of the pulmonary hypertension.

In more recent years mitral valve surgery has moved into a place of acceptance. Even though the long term results cannot yet be determined, the early response is most favorable and offers a salvation to many cardiac cripples suffering the consequences of mitral stenosis.

This report covers 50 patients who received surgical treatment for rheumatic mitral disease at this hospital during the years 1951 to 1954. Two operations were performed in 1951, 12 in 1952, and the remaining 36 in 1953 and the first three months of 1954.

SELECTION OF PATIENTS

The preoperative study and evaluation of patients in this report have been carried out by the cardiology section. Patients with mitral stenosis are grouped in four classes according to functional capacity.

Class I Auscultatory evidence of mitral stenosis exists but the patient presents no symptoms of the disease.

Class II The patient is symptomatic but is able to carry on normal activities with minor limitations and there is no subjective evidence of progression of the disease.

Class III The symptoms are progressive. There is moderate to marked limitation of activity. Auricular fibrillation, hemoptysis, and episodes of acute pulmonary congestion may or may not have occurred. These patients show a limited response to cardiac drugs and bed rest.

Class IV The patient is severely incapacitated, bedridden, with marked symptoms. Chronic heart failure is usually well established.

Such a classification corresponds very closely to that used by the American Heart Association as well as by Harken and associates.

The cardiology section of the hospital assumed an active role in the management of the patients during operations and the im-

mediate postoperative period. A continuous electrocardiogram made during the operative procedure guided the emergency administration of indicated drugs. The long term follow up and final evaluation of mitral valve surgery was determined by the cardiologists.

Because the mortality rate associated with mitral commissurotomy is directly related to the severity of the disease as indicated by the patient's classification, an increased mortality rate was anticipated in any series in which a large number of class IV patients receive surgical treatment. Janton and associates¹⁶ reported a mortality rate of 5.8 percent in 274 patients. Harken and others found a mortality of 20 percent in class IV patients with an over all mortality of three percent in the other classes. Gerbode and others¹⁷ recorded five deaths in a series of 44 patients, a 11.3 percent mortality rate. Julian and co-workers¹⁸ noted five deaths in 42 patients undergoing mitral valvulotomy, a 12 percent mortality rate. Griffith and associates¹ reported nine deaths in 126 patients, a mortality rate of seven percent and emphasized that only class III and some class IV patients should be selected for operation.

Thirty five of the patients reported in our series were in class III, 12 were in class II, and the remaining three in class IV. We have not intentionally avoided surgical intervention in class IV, but only three patients of this type presented themselves for treatment. No definite correlation was found between the functional classification and the existence of a past history of rheumatic fever. Twenty six patients had had a history of rheumatic fever and in nine others this was questionable. Of the 50 patients in this series, 39 were women. The comparative dearth of men in this series is accounted for by the fact that mitral heart disease ordinarily disqualifies men for active military service, and because it is usually detected during physical examination at the time of induction, fewer men present themselves later for treatment of this disease. Three patients were 18 to 20 years of age, 21, 20 to 30 years, 18, 30 to 40 years, and eight were 40 to 46 years of age. This age distribution is consistent with that reported in larger series, indicating that the gradual progression of stenosis produces disability most frequently in the third and fourth decades of life.

DIAGNOSIS AND TREATMENT

Preoperative diagnoses made in 37 patients were confirmed by the surgeon, and demonstrate the accuracy of the diagnosis of a pure type stenosis (table 1). The confirmation of six of 13 preoperative diagnoses of mitral stenosis with insufficiency gives some indication of the difficulty of determining the major factor

in those patients with findings of both stenosis and insufficiency. It is also significant that in nine patients presumed to have other valvular involvement in addition to mitral stenosis the surgeon could confirm the multiplicity of valvo lesions in only three patients. This also points out the limitations of present diagnostic techniques in making a complete accurate diagnosis in acquired heart disease. Certainly those patients with multiple lesions should not be denied the benefits of exploration. In those instances where aortic stenosis was diagnosed in combination with mitral stenosis the former lesion was found to be absent or minimal and in no case was it believed that aortic valve surgery was indicated.

TABLE 1 D &

Diag				P	pera	C	f m d by
							urg
M	ral				27		27
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val	l	w	h		9		3

As shown in table 2 49 (84 percent) of the patients had definitive valvular surgery of this group 9 8 percent were successfully treated by the finger fracture technic. Three patients required the use of a valvulotome to relieve the stenosis one of these three patients developed regurgitation to a rather marked degree the other two patients have shown continued improvement.

Cardiac exploration in three patients disclosed a marked degree of nonremediable regurgitation. Thoracotomy with cardiac palpation was carried out in five patients in four of these the left atrium was occluded by thrombus and in each instance the auricular appendage was too small to admit a finger into the heart. The use of alternate routes either through the anterior atrial wall or the pulmonary vein were contraindicated by the presence of an atrial thrombus. One of the patients went into shock shortly after the pleural cavity was opened and did not respond to resuscitative measures. The chest was hurriedly closed without opening the pericardium. This patient's postoperative course was progressively downhill with the development of heart failure lung abscess and empyema. Death occurred on the thirty third postoperative day. Currently we believe this death could possibly have been avoided had the stenosis been relieved. We do not consider hypotension during the course

of operation a specific contraindication to correction of the stenosis

Microscopic study was carried out on tissue from 30 lung biopsies and on 32 auricular appendage specimens. Twenty one of the 30 lung specimens revealed a recognizable degree of pulmonary arteriosclerosis which in 14 instances was considered marked. This suggests that changes occur in the pulmonary vascular tree in response to the persistent increasing pulmonary hypertension existing even in moderately advanced mitral stenosis. This is in disagreement with the observations published by Graham and associates²⁰ in which they concluded pulmonary changes existed only in severe degrees of stenosis.

TABLE 2 *Operative results*

Operation	Number of patients				
	Total	Improved	Unimproved	Not followed	Died
Commissurotomy					
Finger technique	39	35	3	1	
Vinculum	3	2	1		
Cardiac plasty	3		3		
Thrombectomy	5		4		1
Total	50	37	11	1	1

Active carditis was reported in 14 of the 32 auricular specimens. This is of uncertain significance when it is realized that active carditis was clinically manifested in only two patients following operation.

Mild failure occurred in three patients, and mild embolic phenomena were recognized in three patients. In two patients with previous history of psychiatric difficulty, postoperative depression occurred early but responded to psychiatric treatment.

CASE REPORTS

Case 1 This 23 year old woman first developed dyspnea in the last trimester of her first pregnancy. She was treated by bed rest and had an uneventful delivery. For the next five years the patient was given small doses of digitalis. There was an increase in dyspnea and ankle edema with each menstrual period. These symptoms usually appeared midway in the menstrual cycle and disappeared with the onset of the menstrual flow. No specific history of rheumatic fever was obtained.

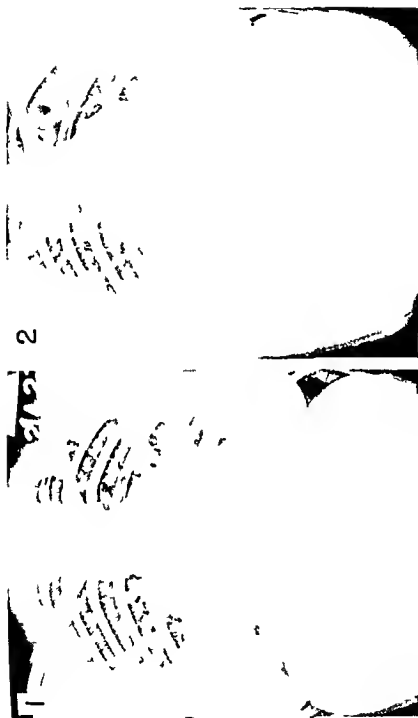


Fig 1 (1) P p ti oe tgenog m P Im nary art y fr
oe tgenogram, P Im nary a t ry pre

va 100/55 mm. Hg
39/19 mm Hg

Fg 2 (e l) P r p i

In January 1952, when the patient was 28 years old, a physical examination revealed her to be well developed and in no acute distress. There was moderate distention of neck veins. Her face was slightly cyanotic when she was in a reclining position. There was a loud presystolic murmur at the apex of the heart, and an opening snap with a loud diastolic murmur was noted. The pulmonary second sound was accentuated and a diastolic murmur was heard in the pulmonary area. The liver edge was palpable two fingerbreadths below the right costal margin.

A roentgenographic examination revealed the heart to be enlarged about 30 percent (fig 1). The enlargement was predominantly in the left auricle and right ventricle. No calcification of the mitral valve was visible on fluoroscopy. An electrocardiogram showed deformed T waves suggesting auricular disease with right axis deviation. The P-R interval was 0.24 second. A cardiac catheterization on 14 January 1952 revealed pulmonary artery pressure of 100/55 and right ventricle pressure of 100/13/25 mm Hg. A diagnosis of mitral stenosis was made.

On 31 January 1952, finger fracture valvulotomy was performed. The postoperative course was uneventful and the patient was discharged from the hospital on the thirty-sixth postoperative day. She was given digoxin throughout the postoperative course, and in November 1952 she resumed normal activity. A roentgenogram at this time revealed decrease in the cardiac shadow (fig 2). A cardiac catheterization revealed pulmonary capillary pressure, 11 to 12 mm Hg; left pulmonary artery, 39/19; right ventricle, 38/0/3; and right auricle, 5/2.5 mm Hg.

Case 2. This 18-year-old white woman developed dyspnea and easy fatigability during childhood. At 13 years of age, following an episode of syncope and epistaxis, a heart murmur was found by her family physician. At this time the patient was treated with oxygen, digitalis, and bed rest, and some improvement was noted. Progression of the dyspnea was observed during the next five years and there were several episodes of congestive failure. Two years prior to admission to this hospital the patient had been given digitalis continuously but this did not control the increasing frequency of severe attacks of nocturnal dyspnea. Intermittent hemoptysis developed in June 1952. She was evaluated at this hospital at that time, but her general condition was poor and the question of rheumatic activity caused the cardiologists to defer operation. No specific history of rheumatic fever was obtained.

A physical examination on 10 October 1952 revealed a pale and apathetic patient with a blood pressure of 102/60 mm Hg and a forceful precordial heave. A diastolic thrill was



Fig 3(a) P p tie ro tg gr m P lmon y tery pr 100/42 mm Hg Fig 4 (s 2) P t p t e
 roe tge s m P l m ary tery pr 36/20 mm Hg v t de d vascul ity of the lung f id

pated at the apex of the heart and a grade II diastolic murmur, ending in a loud snapping first mitral sound, was heard at the apex. The second pulmonic sound was accentuated and there was a grade III systolic murmur along the left sternal border. A grade I apical systolic murmur could be heard. A roentgenogram revealed cardiac enlargement (fig 3). The liver was not palpable and there was no peripheral edema.

Cardiac catheterization on 14 October 1952 revealed the right pulmonary artery pressure to be 100/42, right ventricle pressure, 95/10 2, and right auricle pressure, 9/0 2 mm Hg. Bed rest, low salt diet, and 0.1 gram of digitalis leaf per day were continued. On 13 November 1952 a mitral valvulotomy was performed. The postoperative course was stormy and pulmonary infection developed 24 hours after operation. The patient responded to antibiotics and bishydroxycoumarin (dicumarol) over a period of five days, but convalescence was slow. A followup cardiac catheterization on 17 December 1953 revealed the pulmonary capillary pressure to be 11/5, main pulmonary artery pressure, 36/20 (after three minutes' exercise, 60/36, after five minutes' exercise, 42/24), right ventricle pressure, 45/0, and right auricle pressure, 5/0 mm Hg. The patient had gained weight and tolerated normal activity. A roentgenogram at this time revealed a decrease in the size of the cardiac shadow (fig 4).

SURGICAL CONSIDERATIONS

The current popular techniques used in mitral commissurotomy are based on the principle as originally described by Brunton, using the finger fracture method through the left auricular appendage. A few of our patients required incision of the commissures with a valvulotome. It is not the purpose of this article to describe the operative technique, but we believe that certain points need emphasis:

1. The posterolateral approach permits wider exposure and therefore a greater margin of safety because adequate room is available for the control of hemorrhage if operative accidents should occur.
2. A flush maneuver is used to evacuate clots from the auricle and atrium prior to finger exploration. This eliminates the possibility of a clot being pushed through the valve and the dependence upon carotid occlusion to arrest its progress. We have encountered several old clots of walnut size which were removed by flushing.

3. The proximity of the left coronary artery and its circumflex branch to the site of surgical entry into the heart place these vessels in constant jeopardy. Any clamping in the presence of hemorrhage may result in irreparable damage to the coronary circulation. On three occasions in this series severe hemorrhage resulted from clamping of the

the auricle. In each instance hemorrhage was readily controlled by finger pressure until a clamp could be applied or a hemostatic suture placed under direct vision.

4 The performance of valvulotomy in patients with regurgitation was dependent upon the pliability of the anterior valve leaflet and the chordae tendinae. This is predicated on the belief that the partial opening of a stenosed commissure in the presence of a pliable leaflet and chordae will tend in part to alleviate the regurgitation. Postoperative results seem to justify this approach.

5 Shock appearing at the time the intracardiac manipulation is about to be performed should not contraindicate further surgery. When shock appears at this critical point in the operation valvular stenosis undoubtedly jeopardizes the patient's recovery from it. We believe it wise to complete the valvulotomy in these instances.

6 Various cardiac arrhythmias have been noted during cardiac palpation but are relatively infrequent in digitized patients. The usual measures should be used to control tachycardia prior to the opening of the heart.

7 We have accepted massive clot filling the atrium as a contraindication for cardiac surgery.

CONCLUSIONS

Commissurotomy is now an accepted technic in the treatment of mitral stenosis. The immediate results are satisfactory in the majority of patients. Regurgitation is not necessarily a contraindication to exploration of the stenosed mitral valve because a pliable anterior cusp when mobilized by commissurotomy may correct the regurgitation. The relief of mitral stenosis may be indicated in some patients with multiple valve lesions. Actual sharp division of the commissures is necessary in only a small percentage of patients. The complications of mitral surgery are predictable and are those usually associated with rheumatic heart disease. In this article we present our experience in 50 patients. A mortality rate of two percent places this type of cardiac surgery well within the realm of safety.

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THE PROFESSION OF MEDICINE

Medicine knows no race creed or color but only the sacredness of human life. May it always be the servant of all but the huckling of mere Greatness of the profession will remain as long as we look a the life of man through the clear light of service and not through the colored glasses of wealth and selfishness. I believe that no profession offers a better opportunity for growth in moral and educational values for contribution to the welfare of society and for the relief of suffering than suffering. I believe that no profession for the relief of suffering can approach so closely the goals of kindness, love, and service as does medicine.

— J. M. L. F. S. —

St. Vincent's Hospital, New York City

CARIES SYMMETRY AND GINGIVITIS IN MILITARY WOMEN

A Study of 243 WAVES

LAURENCE M STEIN D I T b G l th d cl USNR

WILLIAM J CARTER L t na t (DC) USN

HAROLD R ENGLANDER L t na t (DC) USNR

NUMEROUS reports have appeared in the literature on the epidemiology of dental caries and gingivitis.¹ They have been primarily concerned with the incidence of these conditions in men or a comparison of such conditions between men and women. These reports were mainly from age and population groups of grammar school or early college levels. This article presents information on the occurrence of dental caries and gingivitis in women in the military service. The rate of bilateral occurrence has been included in this report to show the conformity with similar studies.²

METHODS AND MATERIALS

In the fall and winter 1951-1952 243 women (WAVES) at the Naval Training Center Great Lakes Ill volunteered to participate in a study involving the topical application of sodium fluoride.³ The majority of these women were from states east of the Mississippi River but a few came from the remaining states and outlying possessions. Their ages ranged from 18 to 44 years with an average of 22.4 years. Daily working, eating and sleeping habits were fairly uniform. The results reported here were taken from the files recorded on the initial examination before the fluoride was applied topically.

All dental and gingival examinations were made with a mouth mirror and explorer under excellent lighting conditions. The gingivae were assessed without the aid of air, gauze drying or by the use of pressure on the tissue as recommended by some investigators. The same examiner performed both examinations on all of the subjects studied. A full mouth roentgenogram plus four posterior bitewings were taken on each person and diagnosed by the examiner to supplement the findings of the clinical examination.

F m U S N a l T r a i n g C e n t e r G r e a t L a k e s I l l

The dental caries incidence and past caries experience were determined by a modification of the method described by Klein and associates.⁶ The results permitted the scoring of decayed, missing, and filled teeth (DMF) and also tooth surfaces. For purposes of this investigation, third molars and unerupted tooth were not included. The clinical and roentgenographic information was recorded on a revised public health code sheet which permitted additional security to the study against bias. Another clinician, independent of the study, reviewed the roentgenograms for purposes of locating all carious lesions.

The condition of the gingivae was noted and recorded by the method described by Massler and co-workers.⁷ Separate sheets were used so that gingivitis could be tabulated on the top half of the sheet and gingival recession on the bottom half. Due to the loss of individual forms between the time of examination and reporting, only 135 cases are included in this category.

The material for the bilateral symmetry study was taken from the dental records after they had been corrected and correlated with the roentgenographic findings. The percentage of bilaterally occurring caries was noted for each pair of teeth. In this case, caries was considered present in the tooth if there was a lesion, a filling, or if a tooth was missing. This observed frequency of bilateral caries was compared to the expected frequency of bilateral caries based on the theory of mutually independent events.

This theorem of probability can be stated as follows: If two or more events are mutually independent so that the occurrence of one does not influence the occurrence of the others, the probability of all occurring is the product of their separate probabilities. To illustrate this further, in tossing one penny, the probability of tossing a head is 0.5. The probability of getting three heads when three coins are tossed at once is $0.5 \times 0.5 \times 0.5$ or 0.125.⁸

This identical technique can be applied to the caries experience of teeth. In our study 243 women were examined. As shown in table 1, of 243 pairs of maxillary first molars examined, 210 were both carious, 14 right only were carious, 10 left only were carious, and nine pairs showed no caries. The percentage of carious right maxillary first molars was therefore 92.2 ($210 + 14 = 224 - 243 = 0.922$). Similarly the percentage of carious left maxillary first molars was 90.5 ($210 + 10 = 220 - 243 = 0.905$). Following the example of the pennies, the product of these two percentages 92.2 and 90.5, will give the expected frequency with which both right and left molars should be carious in the same mouth, in other words the probability of getting

TABLE 1. *T. b. d. i. b. i.* 243 HAITS

T h	D i t i		C		T u l	C		C		n i	B d		X (h q)
	N n	C	R g h n l y	L f n l y		N b e	P e r	N m b	I e r c e		b	d	
<i>Upper</i>													
2 d mol	17	00	13	13	243	215	87.7	215	87.7	76.9	82.3		58.1
1 m l	9	210	14	10	245	224	92.2	220	90.5	85.4	86.4		40.5
2 d b p d	31	164	15	53	243	129	73.7	197	81.1	59.8	67.5		48.0
1 b u s p d	40	147	31	25	243	178	73.5	172	70.8	51.9	60.5		44.3
C p d	170	55	58	30	245	93	38.3	85	35.0	13.4	22.6		38.4
L i	79	91	37	36	243	128	52.7	127	52.3	27.6	37.4		37.8
C i	95	112	16	20	243	128	52.7	132	54.3	28.6	46.1		10.2
<i>Lower</i>													
2 d m l	5	222	10	6	243	232	95.5	228	93.8	89.6	91.4		79.6
1 t mol	4	26	6	7	245	232	95.5	233	95.9	91.6	30		21.7
2 d b u s p d	32	152	30	29	245	192	74.9	181	74.5	55.8	62.6		30.9
1 t b p d	110	69	35	29	243	104	42.8	90	40.3	17.2	28.4		51.7
C p d	705	113	14	11	245	27	11.1	24	9.9	1.1	5.5		49.2
L i	215	10	10	8	245	0	0.2	18	7.4	0.6	4.1		56.9
C u l	213	15	9	6	245	24	9.9	21	8.6	0.9	6.2		91.5

App ro al (11 ho d e V q l g r pe ed mbe fl ha 5)

T b p b a b i l i t y f b e V q l g r pe ed mbe fl ha 5)

bilateral caries if only factors of chance were in operation. By calculation this expected frequency is $0.992 \times 0.905 = 83.4$ percent.

The actual experience or observed frequency of bilateral caries however was 86.4 percent ($210 \div 243 = 0.864$). For determining the significance of the difference between the expected frequency of 83.4 percent and the observed frequency of 86.4 percent, the chi square (χ^2) method was used based on the expected number of carious and noncarious teeth.

RESULTS

The dental caries rates of 243 WAVES are recorded in table 2. There was a range of six to 40 DMF units per person (attacked by caries) with a mean of 22.3 units. The number of decayed, missing, and filled surfaces averaged 50.8 per person for the group with a range of 11 to 114. The average number of open carious lesions per person was 6.7, with a range of zero to 22. There was an average of 4.9 missing teeth per person and 0.4 impacted teeth.

TABLE 2 Rates / unit and surfaces of decayed missing or filled teeth
n 243 WAVES

DMF units	WAVES	Percent	DMF surface	WAVES	Percent
6-10	16	6.6	11-20	9	3.7
11-15	24	9.9	21-30	27	11.1
16-20	51	21.0	31-40	29	11.9
21-25	65	26.7	41-50	59	24.2
26-30	60	24.7	51-60	50	20.6
31-35	19	7.8	61-70	33	13.6
36-40	8	3.3	71-80	16	6.6
			81-90	11	4.5
			91-100	7	2.9
			101-110	1	0.4
			111-114	1	0.4
Total	243			243	

M n DMF units = 22.32 per person

M n DMF surfaces = 50.85 per person

COMPARISON OF ORAL CALCULUS DEPOSITION IN SHIP AND SHORE BASED PERSONNEL

PHILLIP J. BOYNE, L. t na t (DC) USA

ALTHOUGH there have been many epidemiologic studies of dental caries few observations of the rates of calculus formation in large population groups have been reported. A controlled experiment involving the observation of large segments of the population living under different conditions and under various dietary regimens could conceivably be of assistance in indicating the probable causes of oral calculus.

The purpose of this study was to compare the amount of calculus formed in personnel in the naval service living aboard ship with that in a like group of personnel stationed at a shore installation. It was believed that if the results of this observation should prove to be significant the work could possibly be used as a pilot study for future observations of a greater number of patients.

No single factor can be regarded as paramount in the process of calculus deposition rather there is an intricate interdependence of many physical and chemical activities which brings about the precipitation of calcium salts from the saliva and the deposition of these salts on the surfaces of the teeth.

In general those processes which may be associated with the formation of calculus are divided into two groups (1) Those reactions concerned with the actual physicochemical precipitation of the inorganic salivary salts from the saliva and (2) those processes related to the formation of an organic matrix to which the precipitated calcium salts may adhere.

Because the main inorganic constituent of calculus is $\text{Ca}(\text{PO})$ it could be postulated that the concentrations of calcium and phosphates in the saliva are related to the tendency of the saliva to form calculus. Tenenbaum and Karshan¹ noted this relationship and found that the calcium content of the saliva of patients exhibiting no oral calculus was significantly lower than that of patients presenting marked calculus formation.

F. m. U. S. Naval Dental School Bethesda Md.

ton Gurney and Huschart³ found that the ingestion of $\text{Ca}_3(\text{PO}_4)_2$ could influence the calculus forming components in the saliva

It has been suggested by "Lapp"⁴ that the saliva of certain patients tends to be oversaturated with respect to calcium and phosphate so that these elements may be easily separated from the solution and deposited upon the teeth as oral calculus. This oversaturation is closely connected with the amount of calcium secreted and excreted by way of the salivary glands. One of the factors determining the output of salivary calcium is the calcium intake of the body.⁴

It is, therefore not unreasonable to assume that the amount of calcium ingested in the diet might be a factor in determining whether or not certain persons will remain free of oral calculus. Because few, if any, communities maintain a water supply in which calcium ions are completely absent, a unique opportunity to observe a group in which this factor has been controlled exists aboard ship where only distilled water is used for drinking and cooking purposes. It was believed that a comparison of such a shipboard group with a like shore based group would be of interest in indicating the effect, if any of this regimen on the formation of oral calculus.

METHOD

The calculus forming tendencies of a group of 75 men living on board a ship (U S S *Yellowstone*) and using only distilled water were compared with a group of 50 men stationed at the National Naval Medical Center. All of the subjects were of the white race, and the ages of both groups ranged from 20 to 30 years with a median age of 23 years. Only patients free from periodontal disease, gingival inflammation, and gross malocclusions were accepted for the study. Patients of both groups were re examined six to eight months after a complete scaling. Only patients presenting some degree of supragingival formation of calculus at the time of the initial examination and scaling were accepted for the study groups. All the subjects gave histories of having received scalings "routinely" (every six to 12 months) during the past two years. In this way, it was possible to exclude from the study those persons who remain almost entirely free of calculus. The median time between the scaling and the examination (table 1) was seven months for the shore-based group and six and one-half months for the shipboard group.

Although generally speaking the diet available to the shore-based group and the food served aboard ship were similar in respect to mineral content, it was impossible to control rigidly the dietary regimen because those in the shipboard group were able to subsist ashore during liberty hours while in port.

In view of the uncontrollable factors involved it is not possible to indicate that the calcium content of the water supply was alone responsible for the significant difference in calculus deposition noted

CONCLUSIONS

It would appear on the basis of this study that shipboard personnel are exposed to certain factors which are not conducive to calculus formation. The determination of the exact nature of these factors would require a more complex and more highly supervised and controlled study on larger groups of personnel.

Salivary analysis of large groups of patients on various dietary regimens and using both distilled and hard water supplies could conceivably be of aid in evaluating the underlying predisposing factors.

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THE TOO BUSY PRACTITIONER

We oft n hear of the professorial physician & the full time research physician who has retired to his ivory tower n't understanding the problems of the patient or of the practitioner. But what about the private practitioner who retires to his private office and says "I h n'r tme to consider your wor's about your business or family. You h'e a gastric ulcer so just stop worrying. It would be just as logical for h'm to y to a other patient. Yes y have pneumonia but I ha ent t m t give y u penicillin. Unless doctor rak s into acc unt ery sp ct of a ma s life he is giving inadequate treatment."

—H. KENT TENNEY M D

W ns M d l J nal

p 586 Nov 1953

PREVENTION OF HEADACHE FOLLOWING SPINAL ANESTHESIA

PAUL KUSHNER *Captain, MC, USAR*

ONE of the most distressing sequelae of spinal anesthesia, both for the patient and the anesthesiologist, is the post-spinal tap headache. It often complicates an otherwise uneventful postoperative course, and minimizes the salutary effects of the anesthesia. Notoriously resistant to treatment, it retards full ambulation, thus prolonging hospitalization.

The headache may be so severe that it leaves the patient with a lasting and distasteful impression of spinal anesthesia. He soon forgets the role that the anesthetic played in his treatment, but he recalls the "miserable" headache that was its aftermath. In interviewing patients preoperatively one often encounters a reluctance to accept spinal anesthesia because they remember the oft-told and retold experience of an acquaintance who had a postspinal anesthesia headache. Many patients want to be assured that "this will not happen to me." Such assurances are best not given. Yet the physician's failure to do so is often misinterpreted by the patient, and leaves him with the erroneous impression that the incidence must therefore be disproportionately high.

No generally effective medical treatment for the postspinal headache has been found, the results obtained with commonly used analgesics are disappointing. Nor has any method been evolved for preoperatively determining headache-prone persons, although it has been suggested that such a personality type exists.¹⁻⁴

Most anesthesiologists are now agreed that the causative factor is the continued loss of spinal fluid through the lumbar puncture site, with the subsequent reduction of spinal fluid pressure.⁴ The resultant loss of buoyancy of the brain causes tension on the tentorium cerebelli and falx cerebri. The traction on these structures gives the characteristic spinal headache which persists as long as the patient maintains an erect posture. Relief usually follows promptly on assuming a supine position.

From the 121st Evacuation Hospital Korea. Capt. Kushner is now a staff officer at the U. S. Army Hospital at Ft. Belvoir, Va.

thus relieving the tension on the supporting structures. Headaches that do not have these characteristics are probably not spinal in origin although any headache which occurs in a patient following spinal anesthesia is usually attributed to that cause.

It has been estimated by Franksson and Gordh⁷ that spinal fluid is lost at the rate of 10 cc per hour by seepage into the extradural space after lumbar puncture. Prophylactic measures must therefore be directed at restoring the cerebrospinal fluid equilibrium. This can be partially accomplished by puncturing the dura with small bore needles and minimizing the loss of fluid through this site. It has been shown that there is a progressive decline in the incidence of spinal tap headache as the bore of the needle is reduced from 20 to 22 to 26 gage and that headache following spinal anesthesia can be decreased by using small gage spinal needles.

METHOD AND TECHNIC

The present study was undertaken with a 26-gage 2.5 inch spinal needle. All of the patients were soldiers between the ages of 19 and 47 with the average age of 21.4 years. To minimize the postoperative loss of spinal fluid through the puncture site all patients were routinely asked to lie flat in bed for a period of six hours postoperatively. They were also encouraged to drink liquids freely to restore adequate hydration. The patients for this study were unselected. The present series represents consecutive admissions to the surgical service where spinal anesthesia was the method of choice. Three patients in this group had had spinal anesthesia previously followed by headache. Procaine hydrochloride and tetracaine hydrochloride (pontocaine hydrochloride) were used exclusively.

In completing the study certain technical difficulties were encountered in performing the tap with the 26-gage needle. The needle being very flexible because of its fineness had to be used with a 21 gage introducer needle to minimize the danger of breaking the needle in situ. The hub of the introducer needle prevented the 26-gage spinal needle from being pushed flush with the skin and consequently there was a loss of usable length of about 1 cm via the hub of the introducer. Thus shortened to 1.5 cm the 26 gage needle was too short to reach the dura in very obese patients. In these patients the lumbar puncture was easily performed with the standard 22 gage needle and the dura was demonstrated to lie deeper than 5 cm. In this present group of 103 patients only three fell into this category. Spinal fluid flows very slowly through the fine bore of the 26-gage needle and it requires more patience on the part of the operator to wait for the fluid to appear. The use of the 26-gage needle is

also attended with a greater danger of breakage in the hands of those experienced in doing lumbar punctures, and with the use of the introducer, this danger is greatly minimized

RESULTS

Prior to the introduction of the 26-gage needle lumbar punctures were routinely performed with the standard 22 gage spinal needle. The incidence of postspinal tap headache in a similar group in which the 22 gage needle was used was five percent. In the group in which the tap was performed with the 26 gage needle, there was not a single postspinal tap headache. The surgical procedures performed represented a fair sampling of the operations encountered in most military hospitals and included 15 appendectomies, 21 inguinal herniorrhaphies, one umbilical herniorrhaphy, three exploratory laparotomies, 34 rectal procedures, 16 lower extremity procedures, and 10 circumcisions making a total of 100 operations.

The group studied represented a fairly restricted age group, the majority being under 30, however, it is in the younger age group that postspinal tap headache is most commonly encountered. Although these patients had the benefit of the type of psychologic "screening" that combat troops receive, they also were operated on in the field, away from the secure influence of home and family.

The results in this group were very gratifying, and justified the extra effort expended in employing a 26 gage needle. The procedure merits consideration for routine use in spinal anesthesia provided adequate precautions are taken by the operator to prevent breaking the needle in situ.

SUMMARY

Because the incidence of postspinal tap headache has been observed to decrease progressively as the bore of the needle used in introducing anesthetics is reduced, a 26 gage, 2 5/8 inch spinal needle was used in 100 unselected patients. None of these patients developed headache after spinal anesthesia. It is believed this procedure merits consideration for the routine use of spinal anesthesia.

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 July 1950

WHAT THE FUTURE HOLDS

The lowest death rate in the history of the country and the largest annual number of births were forecast for 1954. Dr. Leonard A. Scheele, Surgeon General of the Public Health Service, made his statement on the basis of vital statistics reports for the first 10 months of the year.

The death rate for 1954 is expected to close at 9.2 deaths per 1,000 population—a substantial drop from the rates of 9.6 or 9.7 which have prevailed over the past five years.

Births will top the four million mark for the first time according to preliminary estimates. The expected birth rate of 25.2 per 1,000 population is the second highest in 28 years and only 5.3 percent below the peak year of 1947.

The marriage rate sank to 9.2 per 1,000 population in the first 10 months of 1954 compared with 9.7 for the same period the year before. Low birth rates during the 1930's resulting in relative scarcity of young people of marriageable age in the present decade were held chiefly responsible for the marriage decline.

Diabetes in the first 9 months of 1954 were down 4 percent from the comparable 1953 period on the basis of reports from 25 areas. Since the 1946 peak diabetes rates have dropped over 40 percent.

THE ARMED FORCES INSTITUTE OF PATHOLOGY

RALPH M THOMPSON *Colonel USAF (MC)*

ON 21 May 1862 nearly 93 years ago, the Armed Forces Institute of Pathology was founded and now after these many progressive and fruitful years it finds itself occupying one of the most modern and unique edifices in the world, located on the grounds of the Walter Reed Army Medical Center in Washington, D C

This new building comprises more than 200,000 square feet and is eight stories high, three of the stories being below ground level. The main wall structure is without windows and is of blast resistant, reinforced concrete.

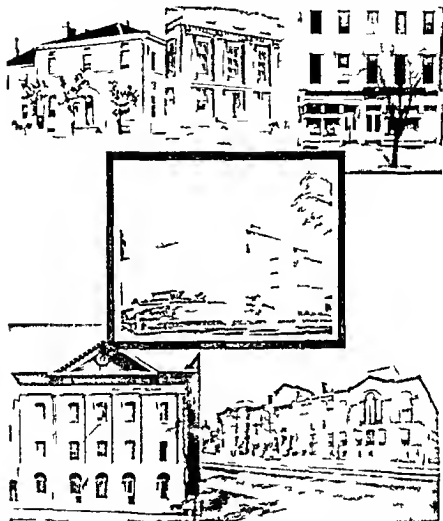
The Armed Forces Institute of Pathology (AFIP) was founded by the young, vigorous, and venturesome Surgeon General William A Hammond and was known as the Army Medical Museum. His great vision and foresight led to the creation of an institute of pathology second to none. This current position and standing of the AFIP is the culmination of the dreams and wisdom of many notable and distinguished minds of world medicine, past and present.

Three months to the day following the creation and issuance of the historical Surgeon General's Circular 2, War Department, dated 21 May 1862, the Armed Forces Institute of Pathology, which we know today, became a physical reality under the direction of Major John H Brinton. The Museum then consisted of three dried and varnished specimens resting on a small shelf above the inkstand on the desk of the newly appointed curator, Major Brinton. There were a few preparations of human anatomy such as several human craniums, a skeleton, two primitive wax injections demonstrating the vascular system, and some plastic casts and drawings which were also in the office of the Surgeon General.

From this modest beginning, the Armed Forces Institute of Pathology today houses almost 700,000 accessions, comprised of surgical biopsy specimens, complete autopsy data and speci

From Armed Forces Institute of Pathology Washington D C. Colonel Thompson's
dedicated

mens and allied pathology material all of which is filed for teaching research and posterity During the preceding 93 years the growth of the AFIP has been phenomenal today as occupancy of the new building commences the AFIP is already faced



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with problems incident to inadequate space and necessary steps have been initiated for possible creation of a new wing and other additions

With continued progress, foresight and future promise, the Army Medical Museum was redesignated in 1946 as the Army Institute of Pathology, a name more suited and befitting the missions and functions incident to professional and scientific advancement.

Recognizing the Army Institute of Pathology as a national organization, on 6 July 1949, following the unification of the armed services, the present designation was adopted, namely, the Armed Forces Institute of Pathology of the Department of Defense.

The Armed Forces Institute of Pathology is further defined and established by the current Department of Defense Directive 5136.5 dated 6 August 1953, pursuant to authority vested in the Secretary of Defense by the National Security Act of 1947 as amended. The responsibilities, functions and relationships are clearly designated and set forth as a joint agency of the three military departments under the authority, direction, and control of the Secretary of Defense with the Secretary of the Army as the management agent. Under existing regulations the policy direction regarding medical and allied activities of the Armed Forces Institute of Pathology is vested in the Board of Governors which consists of the Surgeons General of the Army, the Navy, and the Air Force or their respectively designated alternates who, in the absence of the principals, are authorized to act or speak for them.

Located on the grounds of the Walter Reed Army Medical Center incident to Congressional action, (Bill H. R. 6478) amending Public Law 626, Eightieth Congress, in 1950 the current position of the Armed Forces Institute of Pathology is perhaps best defined by Major General Leonard D. Henton MC, USA, the Commanding General of the Center. Before his key staff members, on 13 August 1954, a meeting also attended by representatives of The Surgeon General of the Army, Commanding General, Military District of Washington, and the Directorate of the Armed Forces Institute of Pathology, he stated the following, which is based upon existing directives:

It should be made plain at the outset that the Armed Forces Institute of Pathology is basically a tripartite organization—Army, Navy and Air Force. It is a separate, distinct class 2 organization under administrative jurisdiction of The Surgeon General of the Army and under the command of The Director. Although the Armed Forces Institute of Pathology will be physically located on the Post at Walter Reed, the only command responsibility that will be exercised by the Center will be of necessity in those areas of administration and logistical support the responsibility for which has been laid down in SGO Administrative

Letter 16 Insofar as those are concerned The Director of the Armed Forces Institute of Pathology will co-ordinate his activities with the Center command

ORGANIZATION

The director of the Armed Forces Institute of Pathology is assisted by two deputy directors representing the other two military departments He is further assisted by a professional technical and clerical staff consisting of medical service or medical department officers and other military personnel of the Army the Navy and the Air Force and also such civilian personnel which includes consultants and experts which he with the approval of the Secretary of the Army as management agent, determines is necessary

With the continued concurrence of the board of governors and the approval of the Secretary of the Army The Director is also aided by a Scientific Advisory Board of Consultants appointed by the Secretary for a term not to exceed five years These members are eminent specialists of the medical dental and veterinary profession

The Armed Forces Institute of Pathology by its charter serves as a central laboratory of pathology for the Department of Defense and such other Federal agencies agreed upon by the Secretary of Defense and the head of the agency concerned It is designated as a self contained and independent institution The Veterans Administration and the United States Public Health Service have been included in this service and more recently the Atomic Energy Commission and the Atomic Bomb Casualty Commission The Armed Forces Institute of Pathology also functions in cooperation with the National Research Council in connection with the operation of the "registries of special pathology under the American Registry of Pathology which is one of its major components (see below) Also the AFIP along with the National Research Council's Subcommittee of Oncology under the Committee on Pathology is charged with the responsibility of the completion of the *Atlas of Tumor Pathology* a work which is internationally known The latter mentioned Federal agencies which comprise the total complement furnish certain professional subprofessional and clerical personnel thus rounding out for the most part the existing family To arrive at the total personnel figure certain fellows sponsored by national medical organizations and a varying number of volunteer workers must be included Some of the latter are from foreign countries

FUNCTIONS

The principal responsibilities and functions of the Armed Forces Institute of Pathology under established and fixed policy are as follows

1 Maintain a consultation service for the diagnosis of pathologic tissue for the Department of Defense other federal agencies and for civilian pathologists and serve as the chief reviewing authority on the diagnosis of pathologic tissue for the Army Navy and Air Force

2 Conduct experimental statistical and morphological researches in the broad field of pathology including correlation with such other medical specialties as will enable the Institute to effectively pursue its research projects

3 Provide instruction in advanced pathology and related subjects to medical dental and veterinary officers of the Armed Forces and, based on availability of facilities to such other qualified professional persons who are authorized to study or receive graduate instruction at the Institute

4 Train qualified and approved enlisted personnel of the Armed Forces in pathologic techniques and in relevant medical photographic medical arts and museum activities

5 Prepare or otherwise procure and duplicate teaching aids such as sets of microscopic slides photographic material medical visual aids or other texts illustrating the pathology of the various special medical fields used in the training of Armed Forces personnel

6 Donate or loan duplicate pathologic photographic and other educational material to other Federal medical services museums medical schools scientific institutions and to qualified persons connected with medical dental or veterinary professions when determined appropriate and practicable

7 Operate the American Registry of Pathology as a co operative enterprise in medical research and education between the institute and civilian medical profession under such conditions as may be agreed upon between the board of governors and the National Research Council

8 Maintain a medical illustration service for the collection preparation duplication publication exhibition reference and file of medical illustrative material of medical military importance except original motion picture footage primarily for the support of programs of the institute but which may be made available to the medical services of the Armed Forces other Federal agencies and qualified persons when determined appropriate and practicable

9 Maintain medical museums for the instruction of qualified and authorized persons and display openly selected museum exhibits to the lay public

10 Perform such other related functions as may be assigned from time to time

From its beginning in 1869 until 1920 the major mission of the museum was collection and display. This emphasis was very important and necessary and this concept laid the foundation for the structure that exists today.

In 1920 Major (now Brigadier General USA (Ret.)) George Russell Callender, an eminent and distinguished physician and pathologist and an outstanding medical administrator with great wisdom and foresight, lifted the Armed Forces Institute of Pathology from a depot for the collection of morbid anatomical specimens to an institution actively participating in the study of living pathology, pathologic research, and pathologic education. He launched the greatest and most dynamic pathologic center in the world. By his untiring effort and great medical vision, various directives were modernized and changed so that complete autopsy data and material and surgical biopsy material were required to be sent in for study, statistical research, and permanent files. In 1920 the then Major Callender initiated the first steps with the co-operation of a group representing the American Academy of Ophthalmology toward the organization of a registry of ophthalmic pathology where pathology relative to the eye could be collected and cases followed for study and research. Thus was born the first of the 22 registries of pathology and subsequently The American Registry of Pathology under the auspices of the National Research Council.

The concepts promulgated by Curator Callender in 1920 have been nobly carried on by the successive curators and directors together with the help and co-operation of their competent and efficient staffs. The late Major Paul Edgar McNabb MC USA and Colonel Virgil H. Cornoll MC USA (Ret.) during the years 1930 to 1935 did much to promote the new look of the Armed Forces Institute of Pathology. Colonel James Earle Ash MC USA (Ret.) was appointed curator in 1937 and later became the director of the newly designated Army Institute of Pathology in 1946. Colonel Ash was responsible for increasing the number of the various registries of pathology and enhanced greatly the professional stature and prestige of the AFIP. As commanding officer during the World War II years he organized a competent and well rounded staff and efficiently met the numerous problems incident to the great expansion.

Following the retirement of Colonel Ash in 1946 Brigadier General Raymond O. Dart MC USA was appointed the director.

Through the untiring efforts of General Dart, this organization became an Armed Forces Institute of Pathology and the new building became a physical reality



Curators and directors from 1920 to 1955 Top row left to right Brigadier General George Russell Callender MC USA (Ret) 1920-1922 and 1924 1929 Colonel James Earle Ash MC USA (Ret) 1929-1931 and 1937-1946 Major Paul Edgar McNabb MC USA 1931-1933 Bottom row left to right Major Virgil H. Cornell MC USA 1933-1935 Brigadier General Raymond O. Dait MC USA (Ret) 1935-1936 and 1946-1950 Brigadier General Elbert DeCoursey MC USA 1950

General Dart was succeeded as director in 1950 by Brigadier General Elbert DeCoursey, MC, USA, who is the present director. It is only fitting that General DeCoursey enjoys the honor of being the first director in this new edifice as he is responsible for the building we have today, which houses one of the most unique agencies of the Department of Defense. He has created the present team of the Armed Forces Institute of Pathology, dedicated to the service of humanity and devoted to the causes and effects of disease.

MAJOR DEPARTMENTS

The Armed Forces Institute of Pathology comprises four major components: the department of pathology, the medical illus-

REGISTRY OF PATHOLOGY

During the calendar year 1953, 77,612 accessions were received, 21,537 of which were autopsy and 56,075, surgical biopsy specimens. The latter included 579 from the Atomic Bomb Casualty Commission in Japan. During the first six months of 1954 there was a seven and one half percent increase in accessions over the same period in 1953.

The source of accessions reflects the spread of the workload from contributors. Fifty two percent of the accessions were received from the armed services, while 27 percent were from the Veterans Administration, 13 percent from civilian sources through the various registries, and eight percent were from other Federal agencies, such as the United States Public Health Service, Atomic Energy Commission, Atomic Bomb Casualty Commission, Federal Bureau of Investigation, et cetera.

The registries of pathology now total 22 (table 1) and operate as previously mentioned under the auspices of the National Research Council. Each registry is sponsored by a national medical society and includes the fields of dental and veterinary medicine.

MEDICAL MUSEUM

The present medical museum, which was the parent and nucleus of the now existing Armed Forces Institute of Pathology, has two principal functions: one to exhibit and illustrate disease and medical problems to the lay public, and the other to collect and preserve gross pathologic material for teaching the medical professions.

Medical items and data of professional historical nature are collected and catalogued by the Museum staff and from time to time parts of these collections are exhibited as well as sent out on loan for exhibit purposes.

It is interesting to note that over 150,000 people visited the museum in the calendar year 1953, and this should be exceeded in 1954. Because of this educational value to the lay public, by Congressional edict, this activity remains in its present location on the Mall adjacent to the Smithsonian Institution where it can best function and perform its services. In the new building space is provided for the professional teaching material and laboratories for the investigation of methods for preserving and mounting specimens.

DEPARTMENT OF PATHOLOGY

With increased space, modern laboratories and other facilities, the department of pathology is completely activated including, in addition to the pathology division, the basic laboratory and the dynamic pathology divisions.

All these activities round out an excellent and complete pathology program and permit expansion from a limited morphologic and statistical approach. The sciences related to pathology are now represented and complete the pathology team. Each of the ancillary disciplines are staffed by competent scientists and assistants.

With the completion of the aforementioned department of pathology the experimental statistical and morphologic research on diseases and injuries of medicomilitary importance will be accelerated and professional education and training will be more complete and definitely expanded to maximum efficiency.

MEDICAL ILLUSTRATION SERVICE

The medical illustration service is maintained for the collection preparation duplication publication exhibition reference and file of medical illustrative material of both medicomilitary and general professional importance. Though primarily for the purpose of supporting the educational and research programs of the Armed Forces Institute of Pathology the facilities of the medical illustration service are made available to the medical services of the Army Navy and Air Force and to such other Federal and civilian agencies or individuals as may be approved by the director. The functions of the medical illustration service are:

1. Maintain a permanent central file of photographic negatives color transparencies photomicrographs roentgenograms drawings and similar materials illustrating diseases wounds and injuries of military importance and selected professional activities of the medical departments of the armed forces. This file is a permanent illustrative record of important medical activities and progress and may be used for illustrating scientific articles and reports the preparation of scientific exhibits audio-visual aids and the publication of atlases and other pathology texts required for the training program of the armed services.

2. Maintain adequate facilities for clinical photography photomicrography and medical art for the Armed Forces Institute of Pathology and supervise similar activities in designated medical installations of the Army Navy and Air Force as indicated herein or as may be directed by the surgeons general of the separate services.

3. Maintain and operate a training aids library containing duplicate prints of motion picture footage on clinical subjects release prints of official films and film strips and a sample collection or photographic record of other Army Navy and Air Force official medical training aids for the Armed Forces Institute of Pathology.

4 Provide facilities for training in medical illustration and medical photographic technics for personnel of the armed forces and such other individuals as may be approved by the director

5 Maintain technical reproduction facilities for printing and publishing the Armed Forces Institute of Pathology texts and illustrations

6 Secure prepare or arrange all details in connection with the production of audio-visual training aids for the Armed Forces Institute of Pathology

7 Arrange and accomplish all details relative to Armed Forces Institute of Pathology displays presented in the Institute and at state national and military meetings and conventions

8 Conduct researches in all phases of medical illustration

In this new Armed Forces Institute of Pathology structure the routine activities heretofore performed, together with the activation of ancillary scientific disciplines, will permit expansion and will lead to greater activities in the field of experimental pathology, pathologic research, and medical education. Regarding the latter much will be accomplished through the medium of the incorporated closed circuit color television system, designed for expansion with the availability of new and improved equipment. The television studio with its two story ceiling height is most modern and impressive as are all of the other laboratories

Dr Melvin A. Casberg,¹ former Assistant Secretary of Defense (Health and Medical) in his address delivered at the cornerstone laying ceremony on 20 October 1953, stated "As we gather in the shadow of this modern edifice some may measure its greatness in terms of concrete tonnage or the dollar cost per square foot but I choose to measure it in terms which do not lend themselves readily to the computations of an adding machine—namely by the countless number of human lives saved and by the suffering and misery alleviated, As I spread the mortar which will unite the cornerstone with this building, it shall be my prayer that all our medical resources, civilian as well as military, similarly shall be cemented in a united fight against disease and for the preservation of our country "

REFERENCE

- ¹ Casberg, M. A. Address at the Armed Forces Institute of Pathology U. S. Armed Forces M. J. 4 1667 1674 D 1953

MILITARY MANPOWER CONSERVATION AND PEPTIC ULCER

BRUNO JASTREMSKI *C I I MC USA*
ELMER W HEFFERNON *C pt MC AUS*

PEPTIC ulcer is frequently diagnosed in army personnel and is a considerable economic problem in loss of manpower. Over the years the medical officers have been keenly aware of this as evidenced by articles published periodically relating the problem of peptic ulcer to morbidity, military effectiveness, social problems, cost, etcetera. Having reviewed these studies, we are reporting our statistics which are based on eight months' observation of 111 enlisted men and 29 officers with peptic ulcers who have been under our care. Our objective is to recommend a plan of treatment and disposition of these patients and possibly to stimulate a more extensive study aimed toward deriving maximum benefits from both aspects of such a plan.

PLAN FOR PEPTIC ULCER MANAGEMENT

Our course of action at this hospital has been modified to the present plan. If the patient is an officer, we try to retain him in the service with few exceptions, regardless of whether or not his ulcer was incurred in the line of duty. We believe, however, that enlisted men who have had a peptic ulcer prior to coming on active duty should be separated under the provisions of SR 600.450.10 because of the possibilities of poor motivation and of aggravation of the ulcer by continued service. Occasionally such soldiers who were near the end of their regular enlistments have responded to treatment and were retained in active duty status until separated through regular channels. The major problem, however, is to decide who of the enlisted men with ulcers incurred in the line of duty should be given medical retirement with severance pay or pension and who should be kept in active service.

Most of our patients were hospitalized after the diagnosis was established on the basis of a complete workup including gastrointestinal series on an outpatient status. Those who had night pain, radiation of pain to the back, obvious complications, or failed to respond to treatment as outpatients were hospitalized. Ulcer craters were demonstrable in these patients much more fre-

From *U S Army Hospital for the Blind*, Bethesda, Md.

quently than reported in a civilian gastroenterologic practice. All patients were followed by gastric analyses after Ewald meals, and careful examination of their stools for occult blood.

Patients were hospitalized for about three weeks, depending on severity of symptoms, response to treatment, and the presence of complications. They were placed on a strict Sippy diet which was rapidly progressed. They also received aluminum hydroxide gel (amphojel) hourly throughout the day and from two to three hour intervals during the night. Phenobarbital was given four times daily, before meals and at bedtime. Methantheline bromide (banthine bromide) was routinely used, in 100 mg doses every six hours or in 50 mg doses before meals and one dose of 100 mg at bedtime. Bed rest with bathroom privileges was maintained until symptoms had abated when ambulation was permitted. Smoking was prohibited and the patient was urged to abstain permanently. Small, simply written booklets about peptic ulcer were given to patients for their education. They were then briefed, either individually or in a group, about the ulcer problem in general and were encouraged to ask questions and join in the discussions. Roentgenograms and diagrams were shown to the patient when necessary for his further education. Other supportive therapy was given when indicated and any ulcer complications such as hemorrhage or obstruction were treated specifically as they arose.

After a patient had been asymptomatic for a week or more he was returned to duty or separated depending on factors to be discussed. Those going back to duty received a P 3 on their physical profile with recommendations for omission of field duty, heavy labor, and other duties that might interfere with their future care. Each profile is effective for six months at the end of which time each patient must be re-evaluated by a medical officer. The patient was given a convalescent ulcer type of diet to follow for an indefinite period. He was instructed to take milk between meals, carrying it in a thermos bottle if necessary. He was given 0.016 gram of phenobarbital to take before meals and at bedtime, and 2 drams of aluminum hydroxide gel an hour after meals and at bedtime or at any other time for epigastric distress. Methantheline bromide was given depending on its need. Smoking was prohibited. Laxatives were also prohibited and for any resulting constipation a mixture of equal parts of orange juice and water one to three times daily was advised. General advice was given regarding emotional tension, proper rest, diet, and avoidance of alcohol. The patient was then seen as an outpatient once a month or more often if necessary. Social aid was given when needed. This program was based on our firm belief that a peptic ulcer, especially duodenal, constitutes a chronic problem similar to diabetes mellitus, and thus demands pro-

longed intelligent management and prophylaxis to keep the patient well

MANAGEMENT OF GASTRIC ULCERS

The management of patients with gastric ulcers was similar with certain modifications. All were hospitalized and those whose lesions were obviously malignant were operated on. The rest were treated as discussed earlier; however, upper gastrointestinal series were repeated at least once a week. If the ulcer failed to heal completely in five weeks the patient was operated on. When indicated, gastroscopic examination was done. After healing was complete, upper gastrointestinal series were repeated each month for three months and then every three months for one year. These patients were also cautioned to report for examination every six months thereafter for two years. If at any time a recurrence of gastric ulcer is discovered, operation is advised. Two patients with gastric ulcers were operated on and both were found to have benign lesions.

Table 1 gives a breakdown of pertinent factors in our 136 patients with peptic ulcers. These patients were from 18 to 53 years of age; their length of service ranged from two weeks to 35 years and their symptoms were present for from three weeks to 21 years. As expected, patients with longer service reacted more favorably to treatment. Three patients had gastric ulcers. Of 18 patients who hemorrhaged from their ulcers, only one required surgical intervention. Eight patients had recurrence of their ulcer symptoms following a simple surgical closure of perforated ulcers. Those who were married and were eating and living at home did better than those who ate in mess halls and lived in barracks. No correlation has been noted between gastric acidity and ultimate disposition.

RESULTS OF MANAGEMENT

On evaluation of the results of our management we find that 113 patients were sufficiently improved to return to duty. Of this group, 21 were officers and 92 were enlisted men, representing a salvage rate of 95 percent and 81 percent respectively. One officer and 14 enlisted men were separated from the service without compensation because their ulcers were present prior to entering active duty. Eight enlisted men were given medical discharges with compensation because their ulcers were incurred in the service. We are aware that this is an eight-months follow-up only; however, many of these patients had formerly been hospitalized elsewhere or before undergoing this therapeutic regimen were incapacitated for periods up to six or eight months at a time.

TABLE 1 Statistical distribution of pertinent factors in 136 patients with peptic ulcers

Patient	Number	Marital			Occupation				Smoking		Result		
		Married	Single	Unknown	Good	Fair	Poor	Unknown	Yes	No	Good	Fair	Poor
Office	22	17	5		17	3	2		17	5	21		1
Unemployed	114	44	25	45	35	29	40	10	96	18	88	4	22
Total	136	61	30	45	52	32	42	10	113	23	109	4	23

We believe that the majority of the patients with ulcers in the army can perform satisfactory service provided that the recommendations on their physical profiles be followed. It is also important that the medical officer keep track of these patients by periodic checkups in order to maintain prolonged therapeutic control. In this manner a patient can be intelligently briefed and reassured and adequately treated.

SUMMARY

We have presented a statistical survey with an eight-months follow up of 138 patients with proved duodenal ulcers. It is our belief that the salvage rate has been high enough to warrant further study and investigation in other military hospitals to determine whether a prolonged dietary and medical program will be worthwhile in conserving military manpower. It may be that further study will disclose that special mess hall facilities for such patients in the field would be of further value.

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HEART DISEASE AND PREGNANCY

The e is l rrl p blem the t eatm t of the p t ent who is pre a t d wh suffice from heat dise Th phy c n should treat the he rt dise se tho gh the p tie tw re t peg t nd h should treat the preg ncy s th ugh the pat e t dia or ha h t d e In either condition the nd c t o for t e tment sho ld b d cr d only to e ther the pregn ncy o tl h rt d ease Ther is n h t d s e se which t qu r bst t c l terf r nce There i e e n nd ca t on to inter pt a peg cy or ster lize the patie t bec u e f heart d sease

—JOHN F BRIGGS M D

D Jth Ch r

p 152 F b 1954

THE PRACTICALITY OF FIELD RESEARCH

JOHN M HOWARD *Captain, MC USAR*
RICHARD P MASON *Colonel MC USA*

THE army in the field has an opportunity for research that cannot be duplicated by any other organization. Just as the staff of a tuberculosis hospital studies tuberculosis, or that of a cancer hospital studies cancer, so must physicians in the Army Medical Service study trauma. There is no greater opportunity or responsibility in the field of trauma comparable to that of the Army Medical Service. To fail to recognize and to develop this opportunity is, first, to neglect the wounded soldier and, second, to retard the development of the Army Medical Service.

Field surgery is not civilian surgery under canvas, it is a specialty in itself. Unless its problems are studied and documented, the lessons of previous wars must be relearned in each war. Meanwhile, lives and limbs are needlessly lost. Field research offers the means of studying and documenting surgical experiences so that they need not be relearned each time at the expense of our combat casualties.

Field research offers the opportunity for finding better means of caring for the combat soldier. That such an attempt should be made is obvious. The question, therefore, is should the attempt be an organized project by a specialized full time team? This question must be evaluated in terms of its contributions, real and potential, versus its cost in manpower and money. A review of the record of the work during 20 months of the Korean conflict demonstrates a conclusive, affirmative answer. A single specific example proves the value of an organized project and far more than justifies the outlay of manpower and money.

Shortly after the arrival in Korea in December 1951, of the surgical research team from the Army Medical Service Graduate School in Washington, D. C., it became apparent that one of the major problems confronting the surgeons was the management of casualties with arterial wounds. Standard practice in previous wars had been to ligate the vessels because anastomosis had not proved feasible. Meanwhile, progress had been made in the general field of vascular surgery in the United States which

From Army Medical Service Graduate School, Washington, D. C. Dr. Howard is now at Baylor University College of Medicine, Houston, Tex.

warranted a re evaluation of this practice The problem was discussed with the surgical consultant of the Eighth Army who stated that repair of arterial wounds in the Korean conflict had been repeatedly attempted by various surgeons and had not proved feasible In his experience the only casualty who had not lost his leg as a consequence of injury to the popliteal artery was an occasional patient in whom the injury was not recognized and the wound not explored

Repair of arterial wounds was therefore undertaken as a project by the surgical research team The results demonstrated its feasibility The amputation rate following popliteal anastomosis decreased from 72 percent (World War II) to about 20 percent Surgeons from each hospital were instructed in the technique and provided with better instruments As a result the amputation rate fell throughout the theater These trained surgeons however were soon rotated from Korea and the amputation rate rose The operating surgeons from each hospital who arrived as replacements were then given instruction by members of the surgical research team

As a result of this single research project hundreds of limbs have been saved The cost to the American taxpayer of supporting a veteran with an amputated extremity has been estimated at about \$100 000 A hundred such casualties would cost \$10 000 000 The investment in the entire research team in manpower and in dollars is thus but an insignificant fraction of the immediate dividends from this single project

Other studies have delineated the problems of management of the casualty with posttraumatic anuria and definite progress has been made in lowering the mortality from this complication in the combat theater For the first time the entire blood program has been thoroughly surveyed at the point of use in the combat theater and the effects of transfusion on the clotting mechanism reviewed The introduction of the plasma expanders into the combat theater has been supervised and their effectiveness in the seriously injured battle casualty established This resulted in a potential decrease in the high incidence of homologous serum hepatitis The characteristics of wounds and the sequence of bacteriologic and histologic changes have been described The problems of resuscitation and massive transfusions have been analyzed and recommendations made for better treatment

These practical and valuable projects have demonstrated the function and proved the worth of field research Therefore the responsibility for acknowledging and developing the potentialities of field investigation no longer rests with the field research unit but with the leaders of the Army Medical Service

THE MISSION OF FIELD RESEARCH

The primary mission of research in the field is to find better means of providing medical support to combat troops. From the practical standpoint, this consists of defining the problems and then solving them. The identification of the problems may require clinical, laboratory, and statistical studies. Questions such as "Does the stress of combat sometimes lead to adrenal insufficiency?" require considerable basic work, and the result may be merely to demonstrate that no problem in adrenal cortical function is detectable. There is no short cut to the identification of such problems. Similarly, if patients after massive transfusions demonstrate a mild bleeding tendency, the basic problem has not been identified until the clotting mechanism has been studied and the specific defect pinpointed. Thus basic research may be necessary in identifying and solving some of the problems. Basic research as a primary objective should seldom be undertaken in the field because of the inherent difficulties and cost involved. Such work can be better performed in the zone of the interior. The greatest contributions from combat surgical research will come from those studies directed toward therapy.

The second aspect of the mission is to report the findings immediately back to the combat theater and thereby permit the medical officers to keep abreast of developments. The third aspect of the mission is to report to the Research and Development Board those problems which require additional work in the clinics and laboratories in the zone of the interior. Thus the problems of field research will start in the front lines and extend through the entire chain of evacuation. The influence which such work will have on civilian thinking and practice is an additional benefit but of secondary importance in the planning of the work.

METHODS OF OPERATION

The research program should be reviewed by the Coordinating Committee on Medical Sciences, Office of the Assistant Secretary of Defense (Research and Development) to ensure that the three military departments are informed of the research that is to be conducted, to ascertain whether interservice participation is indicated, to avoid unnecessary duplication, to enlist fiscal support, and to make available to the other services progress reports and ultimate results.

The areas of research conducted should be those directed by broad policy of the Department of Defense. The administration and technical support should follow directives of the sponsoring service responsible for the research team, and should be coordinated through the theater commander.

The chief of the Medical Research and Development Division Office of the Surgeon General Department of the Army or of similar divisions of the Navy and Air Force should provide over all direction of effort and co-ordination select personnel and gain the co-operation of military and civilian establishments in the United States for development of teams and methods This office should also assist in liaison between the work in the field and the work in military and civilian institutions in the zone of the interior The direction must be very broad, for the specific direction and administration of the teams must remain in the field The Army Medical Service Graduate School provided such an institution in which methods could be developed and personnel trained

The surgical research unit in the field should be attached to a medical general laboratory for technical and logistic support Because the mission of the theater laboratory is to support the field work it should participate as opportunity provides in the technical projects of the research teams A successful example of such an administrative arrangement is the attachment of the Far East medical research unit to the 406th Medical General Laboratory in Tokyo The surgical research team was one part of the Far East medical research unit The director of the theater medical research unit or his deputy should travel between various research units within the theater area advising and assisting the members professionally and administratively He should keep the army surgeon informed of work planned work in progress and work completed

This liaison also provides an opportunity for the research units to use the perspective of the consultant staff of the field army and theater surgeons in planning research projects originating at the combat level All reports from the field research units should be made to the director of the theater medical research unit and through him to the theater and field army surgeon and to the director of surgical research in the zone of the interior

The surgical research program as designed in Korea included an officer in the combat infantry division to study resuscitation and evacuation a unit at a forward hospital to study the combat casualty during further resuscitation and primary surgery and a unit at an evacuation hospital to study those patients who developed postoperative complications In addition certain casualties could be selectively evacuated to Tokyo Army Hospital and to Walter Reed Army Hospital for follow up evaluation This system requires limited extension Added emphasis must be placed on the work in the infantry division because it is at this level that most lives are lost Furthermore there should be a research unit in the communication zone working in co-operation

with the units in the combat area. This unit could be attached to a general hospital, but should be assigned to the medical research unit of the theater medical general laboratory. Thus overall direction and technical support is retained by the director of the theater medical research unit. In the Far East such a unit could be located at Tokyo Army Hospital and based on the Far East medical research unit and the 406th Medical General Laboratory for direction and support. This plan would permit a patient to be observed from the time he was wounded to the time he left the theater. The unit in the communication zone would provide a means of obtaining systematic follow up in all clinical studies. Casualties could then be selectively evacuated to designated institutions in the zone of the interior for continued observation.

To ensure orientation of the program along the lines of finding and solving the practical problems, while protecting at all times the welfare of each casualty, the surgical research units should be under the immediate direction of a well trained surgeon. He should direct the surgical research program at the field level and be directly responsible to the director of the theater medical research unit. If research is simultaneously in progress in other fields of medicine (epidemiology, psychiatry, et cetera) every effort must be made to overcome the limitations of travel and communication so as to maintain liaison with the work in progress by these groups. The field director in the zone of the interior should spend several months a year in the field. Consultants from civilian or other military installations, most effective shortly after the beginning of a project, should be available when special problems are encountered as they are in a position to assist in the development of the project as related to technical approaches and emphasis.

Communication and travel are two of the most difficult obstacles in a combat theater. The routine monthly visits of the director, theater research unit, to each field unit would do much to overcome the handicaps of communication. Means of transportation should be assigned to the theater research unit for distribution to the various specialized groups. Travel orders should be issued which permit frequent travel between the units in the combat zone and between the combat and communication zone.

ORGANIZATION OF A SURGICAL RESEARCH UNIT

The surgical research unit should be prepared to study primarily the battle casualty, including investigation of the injury and the man's response to it, the tools and methods available

THE UNSUITABLE ENLISTED SEAMAN

WILLIAM K. GOODSPEED Lt. and Comm'd (MC) USNR

WILLIAM B. BUCKINGHAM Lt. and (MC) USNR

OLIVER N. EVANS Cpl. and AGC USAR

A TOUR of military duty has become an accepted part of life in these United States for physically and mentally fit young men. Existing regulations clearly outline the minimum physical standards and mental standards are based on the Armed Forces Qualification Test (AFQT) which is a good objective measurement of ability to learn. There remains a significant group of men who meet these minimum physical and mental standards and who enlist or are inducted into the armed services but who are found to be unsuitable for service and shortly after entry are discharged. These men are of no value to the service because during their short tours of duty they contribute nothing to the overall function of the Department of Defense. The processes of induction or enlistment, transportation to Reception Centers, initial classification and assignment to training groups, issuing of uniforms and equipment, trial of duty, establishment of the diagnosis of inadequacy, preparation for discharge, and finally transportation back home—all represent a wasted expense in money and effort.

In addition to the cost to the Government, the effect of this abortive attempt at military life on the person must be considered. These men are on the borderline of adjustment to civil life and the whole fruitless process of entry into and rapid discharge from the service represents a great personal failure. They are left with the stigma of unsuitable while the remainder of the male population is experiencing an emotional maturation in the armed services. There is no question that these men are not suited for the rigors of military life but their adjustment to civilian life may be jeopardized by an unsuccessful encounter with military service.

From what has been said it can be seen that the interests of the Government and the persons concerned would be best served if these men were screened out prior to entry. With this objective in mind a survey of the men who enlisted through this station

From U. S. Navy Recruiting Station and Armed Forces Enlisting Station
all T. Comd. Goddard and General Headquarters U. S. Naval Hospital Philadelphia
ph. P.

and were discharged as unsuitable for service was undertaken. As Hamburg and others have suggested, such persons provide a logical focus for psychiatric screening research."

MATERIALS AND METHODS

The records of all men who were enlisted through this station between November 1951 and July 1954 and subsequently discharged as unsuitable for military service were examined. The records available for review consisted of two groups: (1) Pre-enlistment papers consisting of an application for enlistment, character and employment references, verification of birth record, police checks, and an Armed Forces Examining Station letter of qualification containing the results of the AFQT and a physical examination; and (2) a report of Aptitude Board proceedings which contained the following information obtained while the man was in service: length of service, General Classification Test (GCT) score, intelligence quotient (IQ) where applicable, and a description of personality and performance while in service. A comparison of these two groups of papers forms the basis for this study.

During the period of this study all men enlisted at this station were sent to the U S Naval Training Center, San Diego, Calif., for recruit training and we wish to emphasize that the in-service information, including the personality descriptions, was obtained from copies of the Aptitude Board proceedings which are sent routinely to the activity at which a man was enlisted. These tests and psychiatric descriptions are not our work but that of the Psychiatric Unit and the Aptitude Board of the training center at San Diego.

RESULTS

During the period of this study, 4,746 men were enlisted at this station, and 97 (2.2 percent) were discharged as unsuitable for military service.

The average age was 18.3 years (with a range of 17 through 28). The parents of 70 men (72 percent) were living together. One or both parents of 24 men (24.7 percent) were dead or separated at the time of enlistment. No information was available in three cases. Ninety men (93 percent) were Caucasians, six were Negroes, and one was not recorded. Sixty men (61 percent) were raised in rural areas, 34 in cities, and unknown in three. The lowest grade completed in school was the 5th, the highest was the 12th, and the average completed grade was the 9th.

Fifty-eight men (49.4 percent) were in the lowest AFQT group (IV) and were classified as poor learners, 19 men (19.5 percent) were in the AFQT Group III and were classified as average.

learners seven men were in AFQT Group II and were rapid learners and one man was in AFQT Group I and was a very rapid learner AFQT results were obtained on 73 men and the average percentile was 27^o Among the 25 men given an IQ test the range in score was from 57 to 103

The average number of siblings was 3.6 (0 to 9) Ten men had an evaluation in one of their three character references that was something less than good or fair Six men had minor police records (mostly traffic violations) and two had poor school or employment references

One man was in the National Guard and one was in the naval reserve but neither had had active duty one was in the National Guard and had served two years on active duty with the United States Army and one man had spent three years in the Maritime Service during World War II

The results of the data obtained while in the service reveal that the average length of service was 58.5 days (14 to 234) and the average GCT score was 39.2 (2^o to 66) The psychiatric descriptions listed 68 men as immature 48 as inadequate 3^o as dull 20 as dependent 19 as anxious 19 as hypochondriacal 11 as schizoid eight as hostile and three as offeminate Most men had more than one of these terms used in the description

Thirty seven men (38 percent) were observed to be enuretic This persisted in spite of frequent wakings during the night Four men were absent without leave during recruit training two were somnambulant and two attempted suicide

DISCUSSION

This study was undertaken with the hope that a comparison of the two sets of data would reveal some basis for rejecting men unsuitable for service prior to entry From a theoretic standpoint such a basis for screening unsuitable applicants should have the following characteristics (1) No applicants should be rejected who would make a successful adjustment to military life (2) the screening process should be easily applicable to large numbers of people and capable of uniform interpretation when applied at various locations throughout the country and (3) the screening process should be of such character that it is applicable both to those who are motivated to enter the service and to those who are opposed to it

The general conclusion of other investigators has been that each person's performance prior to entry into the service should be screened before induction The data routinely collected consists of police checks and character and work references These records show minor defects in 18 of the men examined in this

study thus stringent scrutiny of the records might have prevented the induction of 18 percent of the men in this group. It is not known, however, how many suitable seamen might have been rejected through such a screening for similar minor defects.

On superficial inspection, it might seem that enuresis would be a good reason for rejection. It should be noted, however, that all 37 men who were discharged as enuretic failed to give a history of enuresis at the time of enlistment. After entering the service these men claimed to be enuretic prior to enlistment, but because they desired to enlist they concealed this information at the time of enlistment. For men who were motivated to remain out of the service, it would be simple to assure rejection by claiming to be enuretic. Thus a history of enuresis would be a poor basis for rejection because it could so easily be claimed by those desiring to be rejected for service.

Adequate screening might be accomplished on the basis of a careful search for the personality characteristics described on the Aptitude Board records. The most frequent characteristics were immaturity and inadequacy. We do not know how many "immature" and "inadequate" men were able to make a successful adjustment and are now contributing to the defense of the country. Because the average age of the men in this study was 18, it is to be expected that many of them will be labeled immature. The process of recruit training has been a stimulus to the development of maturity to many in the present generation of American men and it would be unwise to reject all men who evidenced immaturity. This might be a basis for rejection if the degree of immaturity could be accurately and objectively measured, but we know of no such test.

The problem might be solved by more careful scrutiny of each man's preservice achievement but there are many practical difficulties. These men are very young and have not had time to accomplish much before they enter the service. The obvious failures are eliminated by police checks and character, school, and employment references. The mentally unfit are eliminated by the AFQT, but this does not eliminate those who cannot adjust to recruit training because only 50 percent of these men were in the lowest AFQT group.

In short, none of the procedures in present use are adequate in screening out these men before they enter the service. More research is needed on the value of specific tests and procedures which would screen out those who are unsuitable for military service.

SUMMARY AND CONCLUSIONS

Preservice and inservice data are presented on 97 men enlisted in the United States Navy through this station who were sub-

sequently discharged as unsuitable for military service. None of the data contained in this report meets the requirements of an adequate basis for rejection of these men. There is a clear need for more work in this field.

REFERENCE

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RESEARCH IDEAS ENCOURAGED

The Committee on Disaster Studies of the National Academy of Sciences National Research Council in its meeting emphasized the need to encourage research by competent representatives of the social sciences and interested disciplines who wish to advance knowledge through their work and contribute to the solution of disaster problems.

The Committee interested in the effects of disaster upon individuals groups communities and society human responses to the threat and impact of disaster ranging from the individual to the national level the human spectrum of such problems as communication warning organization rescue welfare medical care evaluation and logistics and the long term effects and recovery problems of disaster.

The Committee can support this development to a limited extent by providing financial assistance for investigation and analyses. Assistance will be limited to grants in aid and will normally range from \$200 to \$2,000. Projects requiring large sums which are especially meritorious and pertinent to the Committee's interests can be considered. Proposals from graduate students faculty members and other qualified investigators will be entertained.

Inquiries should be directed to the Committee on Disaster Studies Division of Anthropology and Psychology National Academy of Sciences National Research Council 2101 Constitution Avenue Washington D C



Clinicopathologic Conference

Modigan Army Hospital Tacoma Wash *

HYPERTENSION AND HYPERGLYCEMIA

Summary of Clinical History A 36 year old woman (gravid 3, pare 3, abortus 1) entered the hospital 11 June 1953, having been referred because of elevated blood pressure and ankle edema during e current pregnancy

The patient s last menstrual period was 4 October 1952 and the expected date of confinement wes 7 July 1953 She had had ankle edema for a period of four months, and had been on a salt-free diet for six weeks Three weeks prior to admission she was informed by a civilian physician that she had high blood pressure and a three-plus reaction for urinary albumin The physician s records of her last office visit on 6 June 1953 revealed Weight 155 pounds (normal weight 139 pounds) blood pressure 138/88 mm Hg with a trace of albumin in the urine, and 6 to 8 white blood cells per high power field The previous pregnancy, which terminated with the delivery of a healthy girl on 13 June 1952, was uncomplicated except for moderate ankle edema The blood pressure and urinalysis were within normal limits All previous pregnancies had been uncomplicated except for one abortion in 1945 at the end of the first trimester The family history was essentially negative except that the patient s mother died at the age of 58 years of a stroke

Physical Examination The patient was e well developed well nourished white woman who was co-operative and alert Her temperature was 98.4° F and her weight 154 1/2 pounds Examination of the eyes nose and throat were noncontributory The oral mucosa and teeth were in good repair The chest was clear to auscultation and percussion The breasts were enlarged and the areolae and nipples were prominent There was no cardiomegaly The heart rate was 92 regular, and the blood pressure was 174/100 mm Hg Normal heart sounds were present The uterus was

B & G Emery E All & MC USA Commanding General From the Surgical
Sect Col James E Graham MC USA Chief

TABLE 1 Blood chemistry (H I tr lys Iue d d m l l q l t)

	12 J	17 J	22 Jun	23 Jun	24 Jun	26 Jun	29 J
Bl d urea g	90	90			120		
C bo d d	210	214	250	254	268		
Chl d	1070	1110	990	960	1110	1150	
Sod um					1480		
P m			32	29	39	40	
C f m			52	50	46		
Ph ph					12		
P (gr m p 100 ml)		498 (A 237 G-2 61)			498 (A 142 G-3 56)		427 (A 142 G-2 85)
Alb m g l bul							

enlarged in keeping with the duration of the pregnancy. The fetus was active in a vertex presentation, head floating, and fetal heart tones were 140 per minute and regular. The head was palpable in the left lower quadrant. No other abdominal masses were noted. The external genitalia were negative. Vaginal examination was not performed. External hemorrhoids were present. There was a three plus pitting edema of the feet and ankles. Neurologic examination was negative. The skin revealed no lesions.

TABLE 2 *Blood sugar determinations*

Date (1953)	Mg per 100 ml	Date (1953)	Mg per 100 ml
16 June	40-169	29 June	146
22 June	170-40-42	30 June	119
23 June	228	1 July	134
24 June	146-62	2 July	85
25 June	212-296-300	3 July	118
26 June	188-240	4 July	200
27 June	166	5 July	97
28 June	168		

Laboratory Findings. The hematocrit was 39 on 12 June, and 12 days later was 46. On 24 June the white blood cell count was 15,800 with 79 percent neutrophils and 21 percent lymphocytes.

Repeated urinalyses revealed a specific gravity from 1.007 to 1.021, albumin from a trace to three-plus, and sugar from negative to four plus. Numerous red and white blood cells were seen in most specimens. Granular casts were found on 4 and 5 July. A Sulkowitch test was moderately positive. The results of repeated blood chemical analyses are shown in table 1; blood sugar determinations are shown separately in table 2.

A serologic test for syphilis was negative, as was a spinal fluid culture on 25 June. Urine culture (6 July) revealed *Pseudomonas* species, and on 8 July *Pseudomonas aeruginosa* and alpha streptococci were isolated from a culture of sputum from the trachea.

Röntgenograms of the chest and abdomen on 26 June were within normal limits.

Course in Hospital. From 11 to 15 June the patient was placed on a salt-free diet. With a moderate diuresis her weight dropped to 116 pounds. The blood pressure during this period ranged between 174/110 to 156/80 mm Hg. The temperature was normal.

On 16 June the patient was found at 0800 hours in a semi-conscious state. She responded to stimulation but was disoriented. An examination revealed a left hemiparesis with diminished tendon reflexes and an equivocal Babinski sign on the left. The pulse was 100 per minute and the blood pressure was 210/120 mm Hg. During this period she perspired profusely and exhibited a generalized slight tremor. At 0915 hours the blood sugar was 40 mg per 100 ml and an intravenous infusion of a 5 percent solution of dextrose was started. By 1000 hours the blood pressure was 160/110 mm Hg. The patient was conscious and moved about freely although she was still somewhat irrational. There was no residual paresis and she made an uneventful recovery.

On 21 June the patient's condition was considered to be satisfactory for the induction of labor. The patient was fully prepared for labor when at 0815 hours she had another episode similar to that experienced on 16 June. The blood pressure was 172/104 mm Hg and the pulse 115. She was given 15 cc of a 50 percent solution of dextrose intravenously and a glass of orange juice and recovered promptly without residual neurologic findings. A sterile vaginal examination revealed the cervix dilated 3 cm with 40 percent effacement. The membranes were ruptured artificially and at 1400 hours the patient was delivered of a six pound 10 ounce normal male infant.

At 2300 hours the patient developed another episode similar to that of 16 June. On this occasion it was associated with a convulsion and coma. She seemed more confused and irrational with this episode but recovered. The temperature rose to 101 F (rectal) during the day. Another crisis similar to that noted on previous occasions was experienced at 0200 hours. The blood pressure was 180/98 mm Hg. The patient was seen by the medical staff and a firm somewhat movable smooth mass was detected in the left upper quadrant extending nearly to the midline 6 cm below the left costal margin. It was believed that this did not represent the spleen.

The patient remained comatose in spite of a continuous intravenous infusion of a 10 percent solution of dextrose and the blood pressure ranged between 195/90 and 160/90 mm Hg. She had repeated convulsions most marked on the right side with profuse sweating. On 23 June her condition remained unchanged and convulsive movements largely in the right arm, neck, and face were noted. The electrocardiographic findings were reported as follows: Rate 140, lowering of T waves, P waves merged, change compatible with hypokalemia. The blood chemistry varied as indicated under the laboratory findings (table 1). The patient was digitalized. On 24 June her condition was essentially

unchanged. The deep reflexes were normal. Mild sedation was continued. The electrocardiographic record was less suggestive of hypokalemia. On the morning of 25 June the patient's condition was considered somewhat improved. Later in the day, however, evidence of phlebitis in the right leg developed and her temperature rose to 105.6° F (rectal). The blood pressure varied from 140/90 to 152/76 mm Hg. From 4 to 6 July the patient had numerous bowel movements. The stools were greenish and semifluid in character. She was irrational during this period and frequently revealed muscular twitching on the right side of the face. On 6 July cyanosis was noted and she was placed in an oxygen tent. On 7 July the temperature was 102° F (rectal) and the pulse was 112. The blood pressure ranged between 126/80 and 152/76 mm Hg. During the patient's entire febrile period, streptomycin and aureomycin had been given without apparent therapeutic effect. On 8 July the temperature was 103° F (rectal) and the pulse had increased to 160. The blood pressure, however, dropped below 80/40 mm Hg and responded only temporarily to a continuous intravenous drip of norepinephrine. During the afternoon of 8 July the patient's diastolic blood pressure continued to drop and there was marked cyanosis of the skin. The patient was pronounced dead at 1535 hours, 8 July 1953.

DISCUSSION

Doctor Bix: Would you show the roentgenograms, Doctor Shippey?

Doctor Shippey: We have a roentgenogram taken of the chest on 26 June 1953. The film is essentially normal. No evidence of consolidation is present within the lungs. A flat film of the abdomen shows a small amount of gas in the bowel but there is no evidence of calcification or obstruction. We fail to outline sufficiently the clinically reported tumor mass.

Doctor Bix: Doctor Dickerson, will you present the interpretation of the electrocardiogram?

Doctor Dickerson: I think these electrocardiograms are of note particularly by reason of what they don't show and by reason that what they establish had not occurred prior to this patient's hospitalization. For one thing you can say that this patient did not have heart disease, cardiovascular disease in the past. The record in no way suggests longstanding hypertension. On 23 June there was an apparent prolongation of the Q-T interval which is consistent with but not diagnostic of hypokalemia. The next two days there appears to have been improvement.

L. Colwell, M.C. Bix, M.C. USA, Chief Laboratory Service

M. Norma E. Shippey, M.C. USA, Chief Radiology Service

L. C. Robertson, M.C. USA, Chief Cardiology Service

Dr. Patton

but then comes 26 June and something clearly happened at that time. This is one of the circumstances which is not too frequently encountered in clinicopathologic conferences where instead of asking you a question to the pathologist "Did you find the pulmonary infarct?" There were upright QRS complexes in lead I on 22-23 and 25 June and then they were clearly reversed on 26 June. The electrocardiograms also revealed a tremendous degree of right axis deviation on that date and the fact that this was not an artifact was attested to by the slow but gradual return toward the normal picture. There was some improvement on 29 June and by the time of the last tracing on 6 July the record was much like the normal sinus rhythm of 22 June. So again assuming that this patient had not had a long history of hypertension. The evidence is nothing to suggest a cardiovascular renal disease so far as it might have been reflected in the electrocardiogram. Finally there is every reason to believe that on 26 June this patient suffered a pulmonary embolism. The prolongation of the Q-T interval is regarded as consistent with lowered electrolyte balance as attested to by the low serum potassium.

D B : Dr Woollicott would you discuss the differential diagnosis in this case?

D : Woollicott : The story of this woman's illness follows a rapid and progressive course beginning with symptoms of toxemia and progressing to convulsive attack which occurred repeatedly and uncontrollably until the death of the patient. There was no previous history of essential hypertension or attacks similar to those described during her present illness.

There are several features we must explain by our diagnosis in this case—the hypertension, the convulsive attacks, the neurologic signs, heart failure, the abdominal mass and some rather bizarre laboratory findings. The first and most obvious diagnosis to consider is eclampsia. Eclampsia could have accounted for the hypertension, the swelling, the stroke-like episodes and the heart failure. But there is no way of explaining the mass in the left upper quadrant with that diagnosis. For this reason I am going to dismiss the diagnosis of eclampsia at least as a primary diagnosis and because the mass in the abdomen is the striking clinical finding in this case I am going to anchor my differential diagnosis around it.

The mass was described as smooth movable and located in the left upper quadrant of the abdomen extending almost to the midline 6 cm below the costal margin. What organs or tissues could cause a mass of this description?

The possibility of a pelvic tumor perhaps a parasitic fibroid should be considered. I know of no way to rule this out. However pelvic examinations were apparently negative during her pregnancy. The medical

officers in attendance believed that the mass was not spleen. There was no lymphadenopathy or blood changes to suggest lymphoma or hypersplenism. Likewise I shall exclude tumor of the stomach because there is nothing in the woman's history to suggest that diagnosis. What about the liver? From my understanding of the position of the mass it would not likely be liver although presumably a tumor of the left lobe of the liver particularly if cystic such as in hydatid disease might protrude into the left upper quadrant but its true nature can usually be perceived by virtue of its descent on inspiration. What about tumors of the kidney? The only tumor of the kidney I would consider in this case would be carcinoma or hypernephroma. Hypernephroma of the kidney which is the most common kidney neoplasm in adults might very well account for a mass of this size in the abdomen. There was microscopic hematuria to support this diagnosis. Against a diagnosis of this tumor is the fact that hypernephroma is rarely found before the age of 40 years and it is twice as common in males as in females. Also there are too many clinical aspects of this case left unanswered by that diagnosis.

What about the pancreas? Pancreatic cysts are palpable in nine cases out of 10 and are usually found in the epigastrium to the left of the midline; they could account for this mass as could cysts of the omentum and mesentery. The latter are characterized by spherical shape and extreme mobility. Neither of these diagnoses seems likely in this case. Carcinoma of the pancreas I shall likewise rule out. A carcinoma of the pancreas of this size would probably have produced other signs of malignant extension or metastasis such as jaundice.

What about adenoma of the islet cells of the pancreas? These are usually small tumors but have been reported as large as 13 by 15 cm in diameter. I was not able to find a case of palpable islet cell tumor in the literature but there are three case reports of islet cell adenoma complicating pregnancy in the literature.^{1, 2} In 1946 Pompen and others reported a case in Holland which bears a striking similarity to this case in many respects. Their patient had repeated episodes of loss of consciousness, perspiration, blurred vision, slurred speech, mental confusion, headache, elevated blood pressure of 150/100 mm Hg and a transient hemiparesis. These attacks in their patient were associated with depression of the blood sugar below 50 mg per 100 ml. Glucose tolerance tests resulted in blood sugar values as high as 257 mg per 100 ml; thus it would appear that the high blood sugar levels as in our patient would not necessarily rule out islet cell tumor. Cattell and Warren³ have pointed out the fact that the so-called flat glucose tolerance curve long associated with organic hyperinsulinism is not a constant and reliable finding. Between our patient and the patients with islet cell tumor complicating pregnancy in the literature there are some interesting discrepancies. All three cases in the literature occurred post partum. The patients' symptoms were relieved during the pregnancy. Their symptoms had been thought present prior to preg-

nancy and the blood sugar levels were at some time much lower than in our patient— as low as 20 mg per 100 ml

This woman however had many clinical signs and symptoms of hyperinsulinism. First of all she had hypoglycemia 40 mg per 100 ml on one occasion and 50 mg per 100 ml on two others. Secondly she had the clinical features of severe hypoglycemic attack—tachycardia, faintness, sweating, convulsions and coma. Her first attack occurred in the morning presumably following overnight fast. This is typical of a hypoglycemic attack. Thirdly the patient's second attack responded almost immediately to 15 cc of 50 per cent solution of dextrose and orange juice. This is characteristic of hyperinsulinism caused by islet cell tumor. The three criteria the hypoglycemia below 50 mg per 100 ml, the clinical attack of hypoglycemia in the fasting state and the rapid recovery following the administration of dextrose and sugar are thus used by Whipple as a guide for determining which patient requires urgent exploration. Coon has emphasized that when the previous diet has been normal deposits in the postabsorptive blood sugar are below 50 mg per 100 ml mean hyperinsulinism with but few exceptions. He goes on however to point out that a level below 50 mg per 100 ml is not too important if the blood sample taken following several days of subnormal carbohydrate intake will not rule out the latter in our patient. Duncan states that in the islet cell tumor producing hyperinsulinism the blood sugar will usually be high levels as low as 35 mg per 100 ml at some time during the day. Islet cell tumor must be a possible diagnosis in this case mainly because it best explains the hypoglycemic episodes.

Against the diagnosis of islet cell tumor is the fact that the size of the islet cell tumor is usually larger than 2 to 3 cm in diameter. Secondly and this is very important in this case is the low blood sugar value during the last two weeks of the patient's illness despite the fact that she was having repeated attacks. Thirdly we would have to add a second diagnosis of toxemia to explain the hypertension. Fourthly it would be unusual for an islet cell tumor that would allow the blood sugar to rise to 300 mg per 100 ml.

So far we do not choose the islet cell tumor however let us go on to explain this patient's low blood sugar levels? What other conditions may cause hypoglycemia? Secondary liver disease is a possibility. This patient had a level of the albumin globulin ratio with marked displacement of the albumin fraction, a labile blood sugar level following the intravenous administration of dextrose found in liver disease but she had nothing to suggest jaundice or other signs or symptoms of liver disease. No liver function tests were reported in the protocol. Hypofunction of the adrenal cortex can produce hypoglycemia but this patient clinically had nothing to suggest Addison's disease. Hypoparathyroidism may cause hypoglycemia. We have thought of upport pituitary diseases in this patient. These are the kallikreinogen systems. Her pregnancy itself makes

pituitary dysfunction unlikely. Hypoglycemia may be caused by functional hyperinsulinism. It is found in persons with anatomic nervous system imbalance. Pregnancy and lactation *per se* have been recorded as causing hypoglycemia. A possible explanation of this patient's hypoglycemia may be either an insufficient carbohydrate intake prior to her admission or while she was on a salt-free diet or a functional hypoglycemia as the result of her pregnancy. The possibility should also be mentioned that the hypoglycemia may be the result rather than the cause of the convulsions. Hypoglycemia does occur following epileptic seizures for example.

What about adrenal tumors as the cause of this mass? There is nothing to suggest a carcinoma of the adrenal cortex in this patient. Carcinoma and the functional tumors of the adrenal cortex rarely become large enough to be palpated in the abdomen. The only adrenal tumor which I shall discuss, the only adrenal tumor that does become large enough to be palpated, is the tumor of the chromaffin cells of the adrenal medulla, pheochromocytoma. Pheochromocytomas may grow to a large size and occasionally can be palpated through the abdominal wall. Six patients with pheochromocytoma complicating pregnancy have been reported.⁷ This tumor is usually manifested by paroxysmal attacks of hypertension alternating with normal blood pressure levels; however, sustained hypertension has been reported in almost half of the patients. The attacks are caused by the discharge of epinephrine and norepinephrine into the systemic circulation from the tumor. These attacks are sometimes provoked by massage of the tumor, bending forward or backward, injections, operations, and sometimes emotional stress. We can well understand how manipulation of this gravely ill woman during and after her delivery might have precipitated an attack. It would be interesting to know if this woman had had previous attacks of palpitation, headaches, or faintness before her pregnancy; there is no information in the protocol suggesting these symptoms. However, I would suspect their occurrence if this woman had pheochromocytoma.

This woman's attacks are characteristic of this tumor: hypertension, faintness, headaches, sweating, the pale cyanotic skin, and the dyspnea and glycosuria. There is no mention of precordial pain, which is often present. The pulse may be greatly accelerated, but very often is not. Brachycardia may occur and has been reported. The hyperglycemic levels during the last two weeks of her life are characteristic of pheochromocytoma and may be due to epinephrine. Cardiac failure is the most common and one of the most serious sequelae of pheochromocytoma. This woman apparently had signs of heart failure and was digitalized. I would feel much more secure in the diagnosis of pheochromocytoma if a benzodioxane or histamine test had been performed. A roentgenogram of the abdomen was reported as negative. Roentgenographic examination following peritoneal air inflation is useful to out-

There is no way that I can be certain that this woman did not have both pheochromocytoma and toxemia of pregnancy. Bowen and others in their report of a case of pheochromocytoma complicating pregnancy point out the obvious similarity between these two syndromes and the fact that the pheochromocytoma is usually found in women between the ages of 20 to 40 years—that is, the child bearing age.

I believe the abdominal mass was a pheochromocytoma. I do not believe this patient had a primary renal disease although the autopsy may prove me wrong. The urinalysis on the first day of admission was essentially normal. Terminally she had a urinary tract infection as well as a possible colitis or proctocolitis. The symptoms of the latter, however, the diarrhea with watery stools, may have been the result of aureomycin therapy. The patient probably had a terminal bronchopneumonia. Thrombophlebitis also occurred. There was a possibility also of a pulmonary infarct although the patient had no clinical signs to suggest it, such as hemoptysis or sudden chest pain. However, the electrocardiographic findings brought out by Doctor Dickerson add more light on this diagnosis. This woman was bedridden and gravely ill. I believe these infectious processes were like salt in an already fatal wound. I believe the cause of death was a cerebral vascular accident, probably cerebral hemorrhage, suffered during one of her hypertensive episodes. Cerebral vascular accident usually does not cause sudden death except with rupture of a large basilar aneurysm. I believe she probably had a cerebral hemorrhage before her death. The increased respiratory and pulse rate and the rise in temperature are characteristic of the last 24 to 48 hours of life following a fatal cerebral vascular accident. The transient elevation of the blood sugar, the glycosuria, and also the albumin and casts in the urine are compatible with a cerebral vascular accident. The hypokalemia was probably due to the diuresis associated with prolonged intravenous administration of dextrose in the absence of adequate protein and salt intake. I do not believe the low potassium was responsible for the significance of heart failure although it was probably a aggravating factor.

Dr. Woollett's diagnosis:

- 1 Pheochromocytoma, left adrenal
- 2 Cerebral hemorrhage and heart failure

Doctor Dickerson: I am curious as to why so much attention was paid to the abdominal mass. This woman came to the hospital on 11 June and was not found to have this mass. She became gravely ill and was delivered, but still it was not discovered. Two weeks after admission when medical consultation was requested, somebody on the medical staff said that they thought they felt an abdominal mass which didn't show on the roentgenograms. Is it that a kind of red herring?

Doctor Woolcott: Well, my thoughts on that were that the abdominal tumor described here was there all the time. While the woman was pregnant and before delivery the fetus was in the anterior portion of the abdomen and the tumor, if it was a pheochromocytoma, was retroperitoneal. After delivery with the expulsion of the fetus and contraction of the uterus, this tumor may have come forward to a position where it could be palpated.

Doctor Scheyer: I think we should congratulate these interns for their very subtle study of this case. They found almost everything that could be thought of and make it difficult to discuss the case further. It was said that we should think of a pelvic tumor which was felt in the upper part of the abdomen as having connection with the genital organs. Usually we do not find an ovarian cyst so far up in the abdomen but I remember one patient in whom one was encountered. The only ovarian tumor that I know of which might affect blood pressure or blood sugar is an arrhenoblastoma. I agree with Doctor Woolcott that the possibility exists that pre-eclampsia and eclampsia existed together with this tumor which most likely took origin from the adrenal gland.

Diabetes mellitus also has a tendency to produce hypertension and mimic the symptoms of pre-eclampsia. In addition, there is a very high percentage of diabetic patients who develop true toxemia. In association with diabetes, Kimmelstiel-Wilson syndrome, a specific renal disease associated with long-standing diabetes, should be considered. In this syndrome, we find intercapillary glomerulosclerosis with non-inflammatory focal fibrosis of the glomerular tufts. The chief clinical symptoms are moderate to massive proteinuria, hypoproteinemia, edema, and hypertension in combination with diabetes. To exclude this possibility, ophthalmoscopic examination would have been helpful because in long-standing diabetes the fundus usually shows angiospastic phenomena with restriction of vision. There is no doubt that some of the symptoms we find in this case could have been caused by a hypertensive crisis.

I believe a tumor of the adrenal gland was the cause of this patient's symptoms. It has been stated that in pregnancy pheochromocytoma causes severe pre-eclampsia or eclampsia which is always connected with some degree of shock. A feature that was not mentioned before about pheochromocytoma is that there are two different clinical groups. One group has periodic hypertensive attacks and the other group has persistent hypertension. In a thousand lumbar sympathectomies for hypertension, at least six pheochromocytomas and still more tumors of the adrenal cortex were found.

I usually use the phentolamine methanesulfonate (regitine methanesulfonate) test to help with the diagnosis. Phentolamine methanesulfonate is a potent anti-adrenergic drug whose pharmacologic action facilitates the diagnosis of pheochromocytoma. It is also used for interim

medical management of patients with pheochromocytoma to prevent toxysmal attacks prior to definitive surgery

Dr. H. I. I am sure we all have seen patients in whom a postpartum convulsion may be the ultimate and only manifestation of a postpartum eclampsia. This usually occurs within a few hours of delivery but can occur as late as three or four days. I've seen a patient that had her first convulsion on the third postpartum day. Certainly eclampsia is a diagnosis to consider and I would not dismiss it as lightly as did Doctor Woolcott. Edema, hypertension and convulsions definitely point toward that disease. Against this diagnosis, the mass which was present, the fact that the patient had previous normal pregnancies, a urine relatively free of albumin, carbon dioxide within normal limits, episodes of hypoglycemia and hyperglycemia, and the fact that the disease progressed in spite of treatment and evacuation of the uterus.

A third possibility which I do not believe has been mentioned specifically is essential hypertension with superimposed toxemia. Again an adequate urine concentration and a normal blood urea nitrogen, the fact that she had an average size baby, and that the mass was present would militate against this diagnosis. Pancreatic tumor and hyperparathyroidism as well as cerebral tumor are all possibilities, however, I think they are so rarely associated with pregnancy that they can be dismissed. Diabetes associated with toxemia is a possibility. It is very common that a diabetic mother will develop toxemia during pregnancy. The convulsions which the patient had may have represented diabetic coma or insulin shock. Thus pheochromocytoma remains the diagnosis of choice. The age of the patient, the attacks of hypertension associated with changes in blood sugar level, the sweating and tremors, and finally the result of neurologic manifestations reinforce the opinion. The phentolamine methanesulfonate test, Doctor Schey spoke for the benzodone test which I am more familiar with, would have helped in the diagnosis. Bowen and associates, as mentioned by Doctor Woolcott, have reported one case of pheochromocytoma in pregnancy. They emphasized that the similarity between pheochromocytoma and toxemia is so close that it is almost impossible to differentiate the two entities. Although the chemical test is concerned, they mentioned that use of the histamine tetraethylammonium chloride epinephrine insensitization and benzodiazepine test. None of the tests was performed in our case except unknowingly the epinephrine sensitivity test. At the time the patient was given norepinephrine intravenously and yet he did not respond very well. If the clinician had been more alert, he might have given a hint as to the patient's difficulty. One must go with Doctor Woolcott as to the final diagnosis, namely that he had a pheochromocytoma with cerebrovascular accidents.

Doct r Butz Does anybody have any remarks in addition to or in conflict with any of the ideas presented? I would like to ask a question now The clinicians knew the patient had a mass in the abdomen What was the one thing that could have been done if her physical condition had improved?

Docto Horn r Exploratory laparotomy

Doct r Butz That s right An exploratory laparotomy was imperative The question was how to enable her to tolerate the procedure This was oever accomplished The benzodioxane test is very fine but not al ways safe in a moribund patient Now I would like to ask another question What s the difference between epinephrine and norepinephrine physiologically?

Docto Woolcott I am not certain of that but epinephrine increases cardiac rate whereas norepinephrine has less effect on this There may be a mixture of the two and the tumor may secrete one predominantly over the other which explains the variation of the pulse rate in these patients with pheochromocytoma

Docto B t That is right in addition to the fact that norepinephrine does not influence basal metabolism or glyco_oenolysis

Doct r Horn r Would Doctor Dickerson comment on the change from hyperglycemia to hypoglycemia assuming that the patient had a pheochromocytoma?

Docto Dick rso Yes I think that is essentially a manifestation of normal function of the pancreas that has been described It is basically the compensating reaction of a suddenly stimulated pancreas For example in children coma is occasionally observed when the only obtainable history is that the youngster surreptitiously ate a whole jar of preserves alone r e his pancreas has secreted an excessive amount of insulin because of its sudden profound stimulation

PATHOLOGIC FINDINGS

Doct Butz At autopsy a large pheochromocytoma (fig 1) of the left adrenal was found This tumor weighed 690 grams The left frontal lobe of the brain showed many foci of the ischemic necrosis accounting for the right hemiparalysis There was a thrombus of the right tibial and femoral veins and the right uterine vein A large embolus apparently from the right leg was lodged in the left pulmonary artery The kidneys exhibited lower nephron nephroses (fig 2) and minimal hypertensive vascular changes There was a moderate cardiomegaly Close examination of the pancreas revealed no adenomatous islet cell hyperplasia Th mechanism for most of the clinical findings is apparent The hypoglycemia however is not easily explained In most cases of pheochromocytoma there is hyperglycemia if there is any detectable change in glucose metabolism In two instances there was a one and



Figur 1 The left den l gla d h w n g a l a g p h h m o c y t o m u t h
x i v e c r c o n t i n e d w i t h t h o r m a l g h t a d r n a l.



Fig 2 S t f k d y l g t y p l g r b a g f l w p h r
p b 15

four hour lag between the onset of symptoms and the time the blood sugar was drawn. It is conceivable that the patient's glycogen store was low and that the episodes were initially associated with a hyperglycemia. By the time the blood was drawn however the excessive epinephrine stimulation had long since been removed and a rebound drop in blood sugar resulted. The low blood sugar may have been a cause for some of the symptoms which would therefore have responded to dextrose given intravenously. The mechanism of death in this case undoubtedly includes several factors. First the pulmonary embolism, second probably the exhausted state of the heart, and third the possible over all exhaustion of the body and decompensation of the alarm reaction.

Pathologic diagnoses

- 1 Pheochromocytoma, left adrenal
- 2 Pulmonary embolism, left pulmonary artery
- 3 Lower nephron nephrosis"

Doctor H. H. H. Was the tumor chemically analyzed?

Doctor Butz: Yes. We sent it to the medical laboratories of the Army Chemical Center. No pressor amines were demonstrated in the tumor, however, the tumor got to the Center 17 hours after it left this hospital. It was unfrozen and it was believed that the pressor substances may have undergone destruction.

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Authorship cannot be conferred; it may be undertaken by one who will shoulder the responsibility that goes with it. To a responsible writer an article with his name on it is the highest product of his mind and art, his property, as nearly flawless as he can make it, founded in his character and evidence of it.

—RICHARD M. HEWITT, M.D.

In Journal of American Medical Association,
p. 477, Oct. 7, 1954.

ARMY MEDICAL RESERVE OFFICERS TO SERVE ON ADVISORY COUNCIL TO SURGEON GENERAL

A council of five general officers from the Army Medical Corps Reserve to advise the Surgeon General on matters related to the medical reserve has been appointed by the Department of the Army. Major General George E. Armstrong, the Surgeon General of the Army, welcomed the officers invited to form the council at the initial meeting recently in his office. He declared their advice would be sought on special reserve items having far-reaching impact on the health profession of the nation as well as on those problems concerning the general activities of the Army's medical reserve.



Reserve officers of the Army Medical Corps convening with Surgeon General George E. Armstrong at the first meeting. Seated: Brigadier General Alexander Marble and Lt. Colonel J. S. Radwin, Colonel James B. Marshall, and Brigadier General Perrin H. Long. Standing: Lt. Colonel G. S. Hulse and Frank E. Wilson.

The council members include Perrin H. Long, M.D., College of Medicine, State University of New York; Alexander Marble, M.D., Joslin Clinic, Boston; Major General J. S. Radwin, M.D., University of Pennsylvania School of Medicine, Philadelphia; Harold G. Scheie, M.D., University of Pennsylvania Graduate School, Philadelphia; and Frank E. Wilson, M.D., Director of the Washington Office of the American Medical Association.

Meetings of the council are scheduled to be held in the spring and fall of each year. The scope of such conferences to range from procurement of reserve personnel to the use of professional reserves.

Treatment of Nonunion of Mandibular Fracture

CHARLES C. ALLING *Major DC USA*

IN THE course of bone repair, the most common local causes of nonunion of fractured fragments are (1) lack of apposition, (2) movement of the fragments, and (3) infection. This last-named cause is illustrated by the case presented herein, in which adequate closed reduction of a fractured mandible and a clinically well controlled postoperative course failed to result in bony union. In addition, apparent roentgenographic evidence of two lines of fracture when only one existed constituted an interesting problem in roentgenographic interpretation.

CASE REPORT

In 1949 a 24 year old soldier was admitted to this hospital four hours after he was involved in an automobile accident. He had not lost consciousness and was well oriented. Constabulary troopers covering the accident had observed the patient for shock, checked the vital signs, and administered 0.032 gram of morphine sulfate. On admission he complained of inability to "close the front teeth together," but had no acute pain or respiratory distress. His past history was noncontributory.

The patient had no abnormal habitus or facies except for a contusion in the area of the right mental foramen. Bimanual palpation and intraoral inspection disclosed a fracture between the right mandibular bicuspid teeth. The second bicuspid was luxated and very mobile. The right mandibular first molar had a large mesial carious lesion. Radiographically the line of fracture extended toward the base of the body of the mandible in a posterior and inferior arc through the mental foramen. Because the lingual mandibular cortical plate was fractured anterior to the buccal cortical plate, two fracture lines were seen. Periapical abscesses were noted on both roots of the first molar (fig. 1).

The serologic test was negative, and other laboratory findings were within normal limits.

The second bicuspid was removed and a closed reduction of the fracture with interdental continuous loop wiring and inter-

From 11th Field Hospital, Stuttgart, Germany. (Dr. Alling is now signed to William B. Rouse Army Hospital, El Paso, Texas.)

maxillary traction was effected within seven hours after the injury with excellent anatomic results. The patient received 18 mg (30 000 units) of penicillin intramuscularly every three hours for five days and daily irrigations. The laceration of the soft tissue at the extraction site repaired itself in two weeks.



Figur 1 Pre p tw oc ig g m d l i g l m //act i bl que
m diol i l d tion, l x i d nd b uspid and pe rap lab
o first mola

without incident. Firm immobilization and accurate approximation were retained during the following six week period (fig 2). When the traction was removed, however, nonunion was evidenced by the extreme mobility of the bones at the fracture site. There was no clinical evidence of osteoid tissue formation or of a fibrous nonunion.

An open reduction with direct interosseous ligation of the fracture site was decided on in the belief that the first molar was providing an avenue of infection to the fracture line and causing a subclinical inflammation. Two days preoperatively the first molar was sectioned with burs and removed from the posterior fragment. The continuous loop wiring was allowed to remain on the anterior and left sides of the dental arches. An

incision six centimeters long, was made one centimeter below and parallel to the base of the body of the mandible, and the fracture line exposed by sharp dissection. The fragments were freely movable. There was no evidence of a suppurative process.



Fig. 2. Roentgenogram showing closed reduction that resulted in nonunion.

Early granulation tissue on the fractured surfaces was removed with curettes and bone files. Drill holes were punched through the heavy lower cortical margin of the mandible about one centimeter from the fracture line and equidistant from the base of the mandible. Immobilization was obtained by passing a 22 gage stainless steel wire through the holes and twisting the free ends. The soft tissues were closed in layers with catgut sutures, and the skin incision was closed with interrupted black silk sutures. An anatomic apposition was obtained (fig. 3).



Fig 3 R t g n o g m h o w g o p d t o w t h i u
w i r g u l t g m b o n y u n n

Intermaxillary traction was reapplied and clinical evidence of bony union was present after a six week period. The skin incision repaired with minimal scarring and did not appear objectionable.

COMMENT

The three major causes of nonunion of fractures—lack of apposition, movement of the fragments, and infection—by no means comprise the entire list of factors causing this condition, as such a listing would include a multitude of constitutional causes and a more definitive enumeration of local factors. Because this young soldier had no history or clinical evidence of a major constitutional or systemic disease, it was concluded that nonunion was secondary to a local factor. Fry and others describe a number of avenues to a fracture site which infection

may follow to cause an eventual nonunion. Their reasoning leads me to suspect that the causative agent in this patient was the abscessed first molar, because the only material difference in the second phase of treatment was its extraction.

A fine point in the interpretation of radiographic film is raised by the apparent existence of two lines of fracture. Matthews³ described this phenomenon: "It must be remembered that only the cortex makes very much registration on film. When the break is on the bias, we will have what appears to be two separate breaks." The routine use of radiographic examination from several angles would help preclude misinterpretations of the actual character of the fracture site. In this instance an occlusal radiographic projection proved that there was a single fracture line traversing obliquely through the mandible.

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WANTED MORE SPECIALISTS FEWER GPs

Recently there has been among our medical students a desire to go into general practice. This is the result of the advice they have received. Nevertheless, there has never been a time when there is less need for general practitioners than today. With the growth of our country, the population has become more and more condensed. Sparsely settled areas are less frequent. With our roads and rapid transportation, medical centers with various specialties represented can supply a far higher level of care than can be given by an equal number of general practitioners. Most often the internist will be the family medical adviser, because of the greater frequency of ailments of short duration.

Our need in this country at the present time is for more specialists grouped in centers wherever the population is sufficient to support several doctors. This would make for a higher level of service. The need for general practitioners is diminishing, and the trend of our medical students toward general practice is unfortunate and shortsighted. I believe it will be short-lived.

—HOWARD C. NAFFZIGER, M.D.
in *Annals of Surgery*
P. 265, Sept. 1954

Giant Cell Tumor of the Sacrum

RALPH P CAMPANALE *1st Lt USAF (MC)*

WILLIAM J REALS *Cpl USAFR (MC)*

BENIGN giant-cell tumors constitute about 10 percent of all neoplasms of bone and occur most frequently in the long bones of young adults. The vertebral column is infrequently and the sacrum only rarely mentioned in numerous reviews of this tumor. In 1953 Hays was able to collect from the literature only 24 cases of giant-cell tumor of the sacrum and added one additional case report. The rare occurrence of this tumor in the sacrum is believed to justify reporting additional cases.

CASE REPORT

This 24 year old airman was admitted on the surgical service of this hospital on 18 December 1952 because of severe pain of four months duration in his lower back which radiated down his left leg.

Present Illness The patient had experienced the pain suddenly after aliding into a base during a baseball game. Out-patient care from the day of injury to about one month prior to admission consisted of local heat massage and diathermy to the region of his lower back. A roentgenogram of the lower back had been made but the patient had not been informed of the findings. During this three month conservative treatment the patient noticed the gradual onset of constipation which became increasingly severe and progressive difficulty in initiating his urinary stream associated with the sensation of an inadequate emptying of his bladder at the completion of the act of voiding. He occasionally voided while sleeping. About six weeks prior to admission he began to experience attacks of severe lancinating pain which radiated down the posterior aspect of his left thigh into his left leg as far down as the ankle region. He became aware of inability to obtain an erection and of numbness of the skin in the region of his genitalia. One month prior to admission to this hospital he had been hospitalized at his local medical facility and subsequently had been transferred to another hospital where he was placed on a neuropsychiatric ward for psychiatric observation. He recalled that a rectal examination had been

F m U S A F H p I Sh pp rd Au F B T C I C mp I
w g d U S Au F H p tal R m y A F B Pue R

performed, but that no further investigative measures were accomplished. One week prior to admission to this hospital, while on convalescent leave, he experienced pain of such severe nature that his family insisted on complete examination by their family physician. On rectal examination the family physician noted a tumor mass and had roentgenograms made of the lower back and sacrum. The patient was then referred to this hospital for further evaluation and treatment. He had lost about 35 pounds in weight during the four months of his illness. Complete systemic review was otherwise noncontributory.

Physical Examination The patient was well developed and well nourished but appeared to be acutely ill. He walked with obvious distress holding his left buttock with his left hand with a moderate scoliosis to the left. He weighed 142 pounds, his temperature was 98.6° F, pulse, 76 per minute, respirations 20 per minute and blood pressure 118/70 mm Hg. The heart, lungs and abdomen were normal. Rectal examination revealed a moderately tender firm five- by eight-centimeter mass in the retrorectal region between the rectum and the sacrum. Pressure on this mass caused an exacerbation of lancinating pain down the posterior aspect of his left thigh into his leg. Neurologic examination revealed saddle hypalgesia involving segments from S-2 to S-5 on the right. The knee jerks were accentuated slightly bilaterally and the ankle jerks were markedly diminished bilaterally, the left more so than the right. The plantar reflex was extensor in character bilaterally, the left more so than the right. Muscle tone was increased in both legs.

Laboratory Findings Red and white blood cell counts, hemoglobin, hematocrit, urinalysis, serologic tests for syphilis, sedimentation rate, blood urea nitrogen, fasting blood sugar, blood chloride, blood CO₂, combining power, acid and alkaline phosphatase and complete liver profile studies were entirely within normal limits. Dynamic pressure of the spinal fluid was normal. The spinal fluid revealed four lymphocytes per cc, glucose, 76 mg per 100 cc, chlorides, 114.5 mEq/L, globulin two plus total protein 90 mg per 100 cc. The colloidal gold test showed a normal curve.

Roentgerographic study of the sacrum (fig. 1) revealed destruction of almost the entire sacrum below the level of S-1. The posterior cortical layer was preserved. The interpretation of the attending roentgenologist was that the lesion represented a tumor process originating in the sacrum which had broken through the anterior cortical aspect of this bone. Roentgenographic findings of the chest, skull and long bones were normal.

Course in the Hospital. Proctoscopic examination was accomplished to the 12 cm level, attempts to pass the instrument

Surgical removal was the treatment of choice in our patient because the lesion was extensive with an existing cauda equina syndrome. Postoperative irradiation therapy was carried out because of muscle invasion and extension of the tumor along nerves and fascial planes.

The patient has had a very gratifying result with a complete relief of pain and no evidence of tumor recurrence 15 months after initial treatment.

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A NEW COUGH SUPPRESSANT

D tro-3 methoxy N methylmorphinan hydrobomid (Ro 15470/5) a new antitussive agent was administered to 183 patients of whom 39 are included in the appraisal of its merits as a cough suppressant. Twenty seven of the latter subjects had no cough and were given the drug solely for the purpose of determining its toxicity on prolonged administration. Of the 144 instances in which the antitussive effectiveness of Ro 15470/5 was studied 107 had pulmonary tuberculosis 22 bronchitis eight bronchiectasis four bronchial asthma two lung abscess and one bronchogenic carcinoma. Results were as follows 23 patients (15.9 percent) had no to slight relief of cough 67 (46.5 percent) derived moderate and 54 (37.5 percent) marked to complete relief of cough. Single doses of 15 mg q d were productive of better results than 4 mg doses.

—NATHAN RALPH M D

Ame. J. Internal Med. 15 no

p 302 M 1954

Benign Chondroblastoma (Codman's Tumor)

Case Report and Review of Literature

JOSEPH M OPPENHEIM *Captain, MC USA*

ROBERT W BOAL *Colonel, MC USA*

BENIGN chondroblastoma is one of the less common lesions of bone, but because of a certain amount of confusion and disagreement in its nomenclature and its occasional unduly radical treatment as a malignant tumor, it is deserving of consideration. In 1931, Codman¹ described nine cases of epiphyseal chondromatous, giant-cell tumor of the upper end of the humerus, which has since been called Codman's tumor, or which pathologists currently call benign chondroblastoma.

In 1942, Jaffe and Lichtenstein² reported nine cases of this condition, terming it chondroblastoma of bone. They emphasized differentiation of this lesion from giant-cell variants, chondrosarcoma, and osteogenic sarcoma, and noted its occurrence in additional sites. They described benign chondroblastoma of bone as starting in an epiphysis of a long bone, with possible extension to the articular surface of the epiphysis and even into the metaphysis as it developed, but rarely attaining a size of more than from 3 to 5 centimeters in diameter. They found the lesion in the distal end of the femur, the proximal end of the tibia, and the upper end of the humerus. In their series, the tumor occurred more frequently in adolescent or postadolescent males.

The basic tumor cell of the lesion was described as a polyhedral or round cell of moderate size, with a fairly large nucleus. The tumor cells might be closely packed or more loosely agglomerated, with the presence of focal areas of calcification of the cellular tumor tissue. Wherever the calcification becomes intense the tumor cells swell and undergo necrosis. The necrotic tumor tissue comes to be replaced by hyaline chondroid tissue which subsequently may show spots of ossification. There may be areas of hemorrhage and one may see large vascular sinuses bordered by viable tumor tissue, necrotic tumor tissue, or hyaline chondroid material which has replaced the necrotic tumor tissue. Clumps of large multinuclear giant cells may be

From U S Army Hospital Fort Knox, Ky.

logic diagnosis was "benign chondroblastoma of bone." This was confirmed by the report from the Armed Forces Institute of Pathology which added the additional note as follows: "The staff is in agreement with your designation of the lesion as benign chondroblastoma or better yet as a Codman tumor. The staff prefers that eponym because chondroblastoma has been used by Geschickter and Copeland in an entirely different meaning viz that of a quite malignant type of chondrosarcoma which is in sharp distinction to the meaning that Jaffe and Lichtenstein intended when they first coined the term. Therefore to avoid misunderstanding the staff still uses the term Codman tumor for those tumors. All of the main features are present which Codman described viz the lesion is an epiphyseal lesion it is a giant cell tumor and it produces cartilage hence his term epiphyseal chondromatous giant-cell tumor. In addition this particular tumor appears to be in part cystic in character. There are several portions of the wall of a cyst and in many places the wall is lined by indifferent stromal cells and giant cells such as may be seen in an ordinary giant-cell tumor. The staff has previously had a cystic lesion of an epiphysis which was thought to be the result of cystic degeneration of a Codman tumor but it could not be clearly established. In this particular case the question of the nature of the tumor as a Codman tumor is beyond doubt and therefore the fact that cystic degeneration of Codman tumors can develop is established and a very important point is made by this case."

SUMMARY

A benign chondroblastoma (Codman's tumor) of the proximal tibia though characteristic also showed cystic changes. After thorough curettage of the lesion and packing with cancellous bone chips from the right ilium the patient regained full use of the extremity.

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PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army, Navy, and Air Force have recently received temporary promotions to the rank indicated

Medical Corps

J s F Ad ms Comd USN
W lt C. A t r y J Capt USAF
K th P Bachm n Comdr USN
Le nard H B be Capt USN
Ott C B umgatt n, Capt USN
Ly S B l Jt Capt USN
F rd mand V B l y Capt USN
Arthur K. B l Capt USAF
R chard R Came Col USA
W ll m U Cawth n, Capt USAF
J s ph S C l t C l USA
Henry R Coop r Comdr USN
Mart Co p man, Capt USN
Marv D Court y Comdr USN
J m Crawl d Capt USN
Ph l p D C e nem ll Comd USN
P ul D man, Capt USN
Edw d J D yle Col USA
D s l G D g ud Capt USN
Edw d G rtman, Lt C l USA
J me U G thr Capt USAF

Alf d O H ld bl Lt Col USA
H w rd W H ll Comd USN
J mes B H tch n, Lt Col USA
Edw d P l ons Capt USN
W llam J J mes Capt USN
V en E Mart s Capt USN
Alb n L M y J Comd USN
J h E N d m Capt USN
H gh l O C ell Capt USN
A gust O u Capt USAF
Edw L Ov h lt Lt Col USA
Mart A P f e ha t Lt Col USA
B ce H Sm h J Comdr USN
H bert G Stoe kl t Comdr USN
Harry T Stradl d Capt USN
D nald J Str ad Lt C l USA
Ge rg ll T r J Comdr USN
J seph J Tmm s Capt USN
K th A W lk Lt Col USA
H rac D W d n Capt USN
R bert H W e Capt USAF

Dental Corps

R bert M Bla kw ad Comd USN
Aar N B w s J Capt USN
El ha Brand n, Maj USA
J ha C. B w Capt USAF
J ph C. E t Capt USAF
W J H bman, J Comdr USN
R d h H H k Capt USAF
W ad ll T jcks n Lt Col USA
W ll m B J has n J Capt USN
Robert L J ph Comd USN
Theod re A L s y Capt USN
S dne y C L dman, Capt USN
H w d B M Kt y Capt USN
Albert R Oe t l Comd USN

W llam W Ou l t J Capt USAF
R bert D Phillips Comd USN
H w rd C. R e Capt USA
H man K R nd t Capt USN
J ha J S ha id r Comdr USN
R lph H S Sc tt Comdr USN
R hard C Shaw Capt USN
R bert D Sol m Comd USN
J m C. Stoop k, Comdr USN
S m n W Sus wind Comdr USN
H nry E Syzek, Capt USA
W lbur A T k Comd USN
Robe t M Williams Comdr USN
R be t D Wy koff Capt USN

Veterinary Corps

Th m A S Hay Lt C l USA

Jam s K Ma n m Lt Col USA

Limitations in the department will be limited to promotions published in order and dispatches dated subsequent to 1 Oct 1954—Editor

Medical Service Corps

Chalm L And Comdr USN
 Sam l H B bo Comd USN
 L E B Comd USN
 S d y G B Comd USN
 R y T B k Comdr USN
 J m F B k Comd USN
 J ph W C ll Comdr USN
 P I R Co Comd USN
 A hur P Daul Comdr USN
 W lk W E Lt C L USA
 Dw gh L Gadberr Comdr USN
 V I H k L Col USA
 H yw d E H ll C ml USN
 Law oc E H bd Comd USN
 S l y E H ll Comd USN
 D ald L H b g Lt C I USA

M l P H be Comd USN
 J h G H b Lt Lt USAF
 R y D L w Comd USN
 W ll m C L w Comdr USN
 R bert G L k C ml USN
 Edga J M dd C ml USN
 Ch l F M an Comd USN
 D y S M ll Comd USN
 J h A O l y Comdr USN
 J h Sa Comdr USN
 Sta l y C S hoe be g Lt Lt USAF
 K l E S h w n f u r b Comd USN
 L h E Sharpe J Lt C I USA
 Al l d L T Lt C L USA
 L y Th ma Lt C I USA
 W l H W l f d C ml USN

Nurse Corps

L E Ad Lt Comd USN
 Al b E Allg Lt C ml USN
 K h ay B l y Lt Comd USN
 V g a M B Lt Comd USN
 D hy C B k Lt C ml USN
 T l ma M Be n, Lt Comd USN
 L ll M B m Lt C ml USN
 H l L B y l Lt Comd USN
 Martha O Braed busg Lt Comdr USN
 L E B ow Lt Comd USN
 M ry J B ow Lt C ml USN
 El M Ca l Lt Comd USN
 M n M Ch k Lt Comd USN
 V g R Ch p ma Lt Comd USN
 J C ll as Lt Comd USN
 A na Da y Comd USN
 Ell N D ll Lt C ml USN
 R b A E ks Comd USN
 H l R F na Lt Comdr USN
 R h L Fl k g Lt Comdr USN
 B y J Fly I Lt Lt USAF
 I E G Lt Comd USN
 Ma B G ld bw Lt Comd USN
 L rra M H k y Lt Comd USN
 M n l H nw ll Lt Comdr USN
 G rald A H p Lt C ml USN
 P l K H uska Lt Comd USN
 D by M H Lt Lt USA
 A C H Lt Lt USAF
 V g a E J oe Lt Comdr USN
 A na A K Lt Comd USN
 B rtha M K k Lt Comdr USN

E ll K L s Comdr USN
 B bata D L Lt Comd USN
 L l M L gh Lt Lt USA
 H M E L b ss Lt Comdr USN
 Ca b L Lt C ml USN
 D lm U L ll Lt Comdr USN
 N n E Ma Id Lt Comd USN
 H l G M Ca by Lt Comd USN
 M na L M D al Lt Comdr USN
 D h J M K y Lt Comd USN
 R h l Moell Lt Comd USN
 Bla h M O Brya Lt Comdr USN
 L ll M O Lt Comdr USN
 D l C Ph ll pp Lt Comdr USN
 A na M P Lt Comdr USN
 A oe J P y Lt Comd USN
 P S p l y Lt Comd USN
 Al R R lly Lt Comdr USN
 Ma ga E S Lt Comdr USN
 R mary Sh Comdr USN
 Al M Sh dyak Lt Comdr USN
 Ell E Sm h Lt Comdr USN
 H B Sm h Lt Comdr USN
 V ra E K Th mp n, Lt Comd USN
 M bel G Thurbe Lt Comdr USN
 F l ra T l Lt Comd USN
 Emm E Ty Lt C ml USN
 M ry A V gh Lt Comd USN
 A g l ca V ll Lt Comdr USN
 Maud S W l Lt Comd USN
 Myrl M W Comd USN
 Ka h n A Z i kus Lt Comd USN

Women s Medical Specialist Corps

Eliz be h L L mbert C pt USA
 W lla J N w rth C pt USA

C a D R y Id Capt USA
 Mary F W h C pt USA

OFFICIAL DECORATIONS

LEGION OF MERIT

K w Dunlop Col MC USA
Othmar F Gornig Col MSC, USA
John S. Paul Lt Col MC USA

Ryle A. Radk Col MC, USA
Edward A. R. k Lt Col MC, USA

BRONZE STAR MEDAL

Francis C. B. k Capt. MSC, USA
William R. Beisel Maj MC, USA
Gustavo S. Belaval Maj MC USA
Geoffrey H. Binn Lt Capt. MC, USA
John D. Boon Capt. MC USA
Frank E. Cecca Lt J 1st Lt. MC, USA
Charles M. Chumley J Maj MSC, USA
Andrew J. Crutchfield Capt. MC USA
Luis F. Davidson Maj MSC USA
Henry J. Donnelly Capt. MC, USA
Paul C. Etman, Jr. Capt. MC USA
Raymond F. Farnside Maj MC USA
James F. F. wle Capt. MSC, USA
Salvatore J. Gansius 1st Lt. MC, USA
Carl G. G. k Col. MC, USA
Robert C. Gow Capt. MC, USA
Gunnar H. Hag Lt. Col. MSC, USA
James A. Hemphill Capt. MSC, USA

William C. Herrin 1st Lt. MSC, USA
Arthur J. Herstad Capt. MC, USA
Claude L. Hooker Maj MSC USA
Julius A. Howell Capt. MC, USA
William B. Irby Lt. Col. DC, USA
Robert L. Judy Maj MSC, USA
Jack B. Lowrey Maj MC USA
Robert A. Mark Lt Maj MC, USA
Leon G. McConnell Lt. Col. DC, USA
Paul H. Myers Maj MSC, USA
Thomas Y. N. jm Capt. MC, USA
Robert F. Premier 1st Lt. MC, USA
John H. Quinn s-S mbol n Maj DC, USA
Kenneth E. Ridland 1st Lt. MC, USA
James H. Sands Maj MC, USA
John G. Smith Maj DC, USA
Raymond H. White Capt. MSC, USA

COMMENDATION RIBBON

Nicholas F. Atria Col. USAF (MC)
Robert P. Adzima 2d Lt. MSC, USA
Robert A. B. d r Capt. MC, USA
Philip E. Bernatz Lt (MC) USNR
Theodore C. Brown 1st Lt. MC USA
Wiley C. Brummett 2d Lt. MSC, USA
Luis H. Calich Lt (MC) USNR
Gordon Cherwit, Capt. MC, USA
Robert T. Cooley Capt. MC, USA
Donald Q. C. Chran 1st Lt. MC, USA
John K. Cullin Col. USAF (MC)
Victoria T. D. Anna Capt. ANC USA
Harry M. Davis 2d Lt. MSC, USA
Dominic M. D. vec hro 1st Lt. MSC USA
Herbert W. R. Emrich 1st Lt. MSC, USA
Cloyd L. F. usnaugh, 1st Lt. MC USA
Paul R. Fann 1st Lt. MC, USA
Paul H. Ge 1st Lt. MC, USA
Richard F. Grady 1st Lt. MC, USA

Donald J. Hamlin 1st Lt. DC, USA
Hall H. Haymond J 1st Lt. DC USA
L. Ray D. Ho k r Maj MSC USA
Walter A. H. wa d Capt. MSC USA
Clarence Kaplan Capt. MSC, USA
Don F. Kammeling Capt. MC, USA
Bory Z. Krynycky 1st Lt. MC, USA
Walter Lech Jr. 1st Lt. MSC, USA
Milton A. L. wi Capt. MSC, USA
John F. L. dato Maj MSC, USA
David P. Mandville 1st Lt. MC, USA
Harold G. V. tr Capt. MSC, USA
Glenn H. McKenney Maj MSC, USA
John J. Muzzio Jr. Capt. MSC, USA
Samuel G. N. zzaro 1st Lt. MSC, USA
Robert D. Pullbury Lt. Col. MC USA
Richard S. Reed Capt. MSC, USA
Makey J. Re 1 Col. USAF (DC)
Gordon H. R. board s Maj USAF (MC)

*Oak Leaf Clusters

The names of officers of the medical service who have been awarded decorations by the United States Army Navy or Air Force are published in this department each month following receipt of information from official sources.—Editor

MILITARY DUTY OF 300 INTERNS DEFERRED, CHOSEN BY LOT FOR RESIDENCY TRAINING

A total of 300 interns have been elected by the Department of Defense for deferment for one year residencies in 15 medical specialties essential to the military departments. The names were drawn by lot recently from among more than 1,300 non-cren internists who asked for further deferment under the new Armed Forces Reserve Officer Commissioning and Residency Consideration Program announced last September.



Dr. Walter B. Martin, right, and Col. William F. Rus, Jr., MC USA

Dr. Walter B. Martin, president of the American Medical Association, made the initial drawing during ceremonies in the office of Dr. Frank B. Berry, Assistant Secretary of Defense (Health and Medical). The first name drawn was that of Dr. William F. Rus, Jr., University of Michigan Hospital, Ann Arbor, who plans a residency in surgery and expects to take a reserve commission in the Air Force.

REGULAR DENTAL CORPS OFFICERS CERTIFIED BY SPECIALTY BOARDS

The American Board of Oral Surgery

Organized in 1916, the American Board of Oral Surgery is second in size of the seven specialty boards approved by the American Dental Association. The more than 900 dentists certified in this specialty include 21 regular Dental Corps officers of the military services.

Charles C Alling Maj USA

Raymond E Boudreaux Lt Col USA

Richard J Burch Col USAF

Jack B Caldwell Col USA

Charles J Cashman Col USA

James E Chipps Lt Col USA

Walter V Cline Capt USN

H Borchert Detdorff Col USA

Roger G Gentry Comdr USN

Harold G Gree Comdr USN

Rymond F Heisch Comdr USN

William H Heby Lt Col USA

Theodore A Leany Comdr USA

Joseph L Link Comdr USN

Lowell E McKelvey Col USA

Meritt M Maxwell Capt USN

Alex M Mohr Lt Col USAF

Robert B Shur Col USA

William D Simes Lt Col USA

Ralph W Taylor Rear Adm USN

Arthur S Turville Comdr USN

Wilbur N VanZile Capt USN

This is the second of a series. The names of officers certified by the American Board of Periodontics will be published in the March issue.

DEATHS

McLEAN Marvin McDugald, Commander (MC) USN U S Naval Hospital Bethesda Md graduated in 1927 from Johns Hopkins University School of Medicine Baltimore Md., appointed Lieutenant Commander (MC) USNR 21 August 1940 commissioned Commander (MC) USN 2 May 1947 died 31 December 1954 age 54 in Bethesda of metastatic carcinoma.

WILLIAMS Sydney L Wrence Commander (MC) USNR U S Naval Ammunition Depot Crane Ind graduated in 1927 from New York University College of Medicine New York promoted Lieutenant (MC) USIP 7 April 1941 died 20 December 1954 age 52 in Crane of acute coronary thrombosis.

CORRESPONDENCE

To the Editor —I am writing this letter to acquaint prospective and newly discharged medical officers from the Armed Forces with the great need for trained physicians in the field of physical medicine and rehabilitation. The demand for trained medical personnel in this field continues at an ever increasing pace as a result of the development and extension of facilities and programs.

There are excellent and necessary fellowships available through the United States Public Health Service and the National Foundation for Infertile Paralysis for qualified physicians with an interest in this field. The need is great and there are unprecedented opportunities not only in teaching institutions but in hospitals and in group practice. There presently exists a rare opportunity for the young physician who is interested in comprehensive care of patients to fulfill an important role in an ever expanding field.

HOWARD A. RUSK, M.D. Director
 Director of Physical Medicine and Rehabilitation
 New York University-Bellvue Medical Center

To the Editor —The Association of Military Surgeons of the United States at its sixty-first annual convention held in Washington, D.C. on 29 November to 1 December 1954 awarded a Certificate of Merit to the Armed Forces Medical Publication Agency for the excellence of its scientific exhibit.

The certificate is enclosed and is herewith forwarded with pleasure and congratulations.

ROBERT V. SCHULTZ, Captain (MC) USN
 Chairman, Scientific Exhibit
 Association of Military Surgeons

The dignity of medicine which sets it apart from other professions which create confidence of patient in physician and permits them to entrust their lives to our hands.

—JUSTUS OHAGE, M.D.
 Associate Medical Director
 p. 697 Oct 1954

GEN BENSON HEADS AERO MEDICAL ASSN MEETING IN WASHINGTON, 21 23 MARCH

Specialists in aviation medicine from the Army, Navy and Air Force will participate in the scientific program of the twenty sixth annual meeting of the Aero Medical Association at the Statler Hotel in Washington, D C , 21 23 March 1955, under the presidency of Brigadier General Otis O Benson Jr , USAF (MC)

The first Louis H Bauer Lecture, established in 1954 in honor of the founder and first president of the Association, will be given by John F Fulton M D , distinguished physiologist, biographer, and medical historian of Yale University General Benson has announced. Dr Fulton s presentation on 21 March is entitled "Louis H Bauer and the Rise of Aviation Medicine " The Honorable Stuart Symington, United States Senator from Missouri, will give the principal address at the annual dinner on 23 March.



*John F Fulton M D of Yale
University will give the first
Louis H Bauer Lecture*



*Brig General Otis O Benson
Jr USAF (MC) President of
the Aero Medical Association*

Among the special features of the scientific program, arranged by a committee under the chairmanship of Captain Clifford P Phoebus (MC) USN, are a symposium on space medicine to be conducted by Colonel A P Gagne USAF (MSC), and a panel on flight at extreme speeds and altitudes by a group of the world's leading civilian and military test pilots Military aeromedical scientists on the program include

21 March

Th Ch g g C mpt x f A t M d —Air C m m d T C Ma Donald
R y l Air F Dir t f Hyg d R h A M try L d

Th M d l A p t f A my A tno —Col William S M MC USA Lt.
C l Spurg H N l J MC USA d M J L na d A C by J MC
USA Off c f th Surge Ge l Dep m t f the A my W h gto
D C

The H m P t L g R g Flight—Cha l A Demp y B S Capt
N R. Bur h USAF (MC) l Lt D Ch l USAF (MSC) l t Lt D E
W r USAF (MSC) d Lt N E S h m t, USAF (MSC) U S Air F
A M d l L borat ry W ghe-P t n A F B Oh

Pby l g l d R d b l g l A p t f the 1954 A m d l F ld L b
t ry Balloo Flight —M J Daw d G S m USAF d l Lt C H
S inmetz USAF U S Air F A med l F ld L b ory H l l m
Air F re B N M

Th B l g t l S gn f a f th N tur l B kg und f l g R d t t
S L l nd t E t m Alt tud —H ma n J S ha f Ph D U S
N val Sch l f A us M d P ns l Fl

The Exper m t l S l d C b f th U S A F S b l f A t M d
—H S r gh ld M D Chu f Dep m f Spa M d ne U S Air
F Sch l f A t M d R d l ph Air F B T x

22 March

Th D g nd Ev luat f A t P t t H l m t —Comdr Edw d M
Wurz l (MC) USN U S N ry Aer M d cal Eq pme t L borat ry Phil d l
phu P

E ap F m V t l T k Off Typ A cr ft—C md R la d A B (MSC)
USN d W C B hl B S. U S N val Par h U El C t C l f

E c p by Downw d E j t at H gb Sp d nd H gb Alt tud —I Lt I M
Ba h USAF (MSC) Capt. Edw rd G Sp ry USAF d l t Lt H ry P
N l USAF U S Air For A M d l L borat ry W gh P t
Air F Ba Oh

Eff t f M b l F L v g T ue l E p t Ab upt D l
t n l l E p ur t Abrupt W ndbl t—Lt C l J h P Stapp USAF (MC)
Chu f A m d cal F ld L b ory H l l ma Air F B N M

Aircr ft A d W th H ppy L nd g —C p R h d B Phil p (MC) USN
U S N val Air Stat Gl w l l

F th E luatio f P f Fly g Sy drom —C l L E G t USAF
(MC) S mp Air For B N Y

Th Probl m f H gb-l t ty N t J t A B nd S m S gg t d
S l t —C mdr K h S S t (MC) USN U S N val A T C
P tux R Md

B ght C t t nd T g t Id t f t Th h ld th R da PPl—
S gfr d J Gerath w hl Ph D U S A F S h l f A t Med
in Ra d l ph A F B T

C b A C t m nat P bl m J t A c ft—G tge K t z Ph D U S
Air F Aer M d c l L borat ry W ghe-P tte Air F B Ohio

23 March

Fatal Decompression Sickness in Flight—Reb H. ...
Vincent M. Downey USAF (MC) U S Air Force School of Aviation Medicine Randolph Air Force Base Tex

Factors Affecting the Endurance of Psychomotor Skill—Major Robert B. ...
USAF (MSC), and George T. Hauty Ph.D. U S Air Force School of Aviation Medicine Randolph Air Force Base Tex

An Analysis of Methods of G Protection—Lt. David H. Lewis (C) NVP
Aviation Medical Acceleration Laboratory U S Naval Air Development Center Johnsville Pa

Aviator's Oxygen Breathing Devices Transition to Viable Integrated Systems—Aaron Bloom B.S. Aeronautical Medical Equipment Laboratory U S Naval Air Experimental Station Philadelphia Pa

Oxygen Warning Systems for Military Aircraft—Edward L. Michelson M.S.
Aeronautical Medical Equipment Laboratory U S Naval Air Experimental Station Philadelphia Pa

Current Developments in Improving Informational Presentations for the Pilot—Fred R. Brown M.S. Aeronautical Medical Equipment Laboratory U S Naval Air Experimental Station Philadelphia Pa

Simplifying the Pilot's Task Through Display Quickening—Franklin A. Taylor Ph.D. and Henry P. Birmingham A.B. U S Naval Research Laboratory Washington D.C.

A New Look for Aircraft Instrumentation—Lt. Col. George W. ...
Office of Naval Research Washington D.C.

THE PROBLEM OF EPILEPSY

In the entire field of neurology there is no disease of greater importance than epilepsy. This is very quickly realized when one considers that epilepsy is a chronic disease and therefore that the patients are sufferers over a long period of time. Secondly this is statistically a more important disease since one out of every 200 of the total population has seizures. This of course in view of the number of patients is a far greater problem than the neurologist can handle and moreover these patients need not and should not be the concern only of the neurologists. The physicians in general practice must be equipped to handle the great majority of these patients. It is only the unusual patient who is refractory to therapy or who presents a diagnostic problem that comes within the immediate realm of the neurologist.

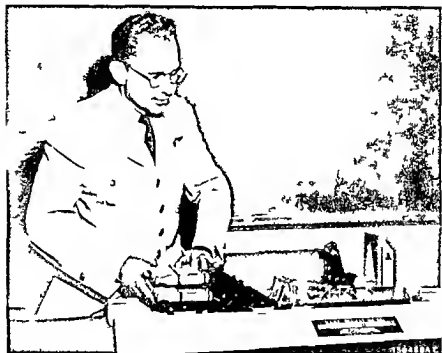
—FRANCIS M. FORSTER M.D.

Medical Affairs of the District of Columbia

p. 137 M. 1954

AIR FORCE FLIGHT SURGEON ATTAINS SPEED OF 632 M P H IN DECELERATION TESTS

Lieutenant Colonel John P. Stapp USAF (MC) Chief of the Aeromedical Field Laboratory Holloman Air Force Base New Mexico on 10 December achieved speed of 632 miles per hour while riding a rocket propelled sled to reproduce exposure to windblast and slow down effects experienced by air crewmen when escaping from aircraft at supersonic speeds. In previous experiments he had attained a speed of 421 miles per hour in the abrupt deceleration vehicle the technological giant of the sled.



Lieutenant Colonel John P. Stapp USAF (MC) and model of the abrupt deceleration sled at the experimental test range at the base.

Exerting a total force of 40,000 pounds thrust the nose rockets propelled the sled to its top speed in five seconds. After the rockets burned out it coasted for less than half a second before the brakes were applied and it was abruptly halted. During these latter moments Stapp withstood a deceleration force of 35 g and wind pressure of more than two tons. With the exception of a plastic helmet and visor he wore no special clothing during the test.

A MESSAGE FROM THE A M A

It is anticipated that a number of legislative proposals concerning medical care for dependents of members of the armed services will be introduced in the opening session of the 84th Congress. For a number of years the American Medical Association has been interested in this matter. There has also been a growing awareness in the medical profession and in government circles of the need for careful correlation of military and civilian medicine.

The American Medical Association and the medical profession generally desire that the highest quality of medical care be provided and maintained for the entire population including military personnel and their dependents. It should be clearly understood that the Association is not opposed to the provision of medical care by the Federal government to the dependents of service personnel, if Congress, in its discretion, decides that such care is a proper emolument of military service. The Association, however, is concerned with the manner in which the medical care is to be provided.

The first legislative action taken in the United States in this regard was the Act of July 5, 1884 (23 Stat. 112). It authorized medical officers of the Army and contract surgeons wherever practicable to attend the families of officers and enlisted men free of charge. On 10 May 1943 the Congress passed an Act (Public Law 51 78th Congress 57 Stat. 80) providing medical and hospital care for dependents of personnel of the Navy and Marine Corps suffering from "acute medical and surgical conditions, exclusive of nervous mental or contagious diseases, or those requiring domiciliary care." This law also provided that dependents of Coast Guard personnel should be furnished hospitalization during periods when the Coast Guard was operating as a part of the Navy.

There is no specific Act of Congress pertaining to medical care for dependents of personnel of the Air Force, but the Act of 1884 has been considered applicable.

Medical and hospital services were provided for dependents of commissioned officers of the United States Public Health Service.

From the Council on National Defense of the American Medical Association
The following resolutions were passed at the 115th Annual Meeting of the Association
Editor

by a regulation of that Agency published in 1931. Similar services were provided dependents of Coast Guard personnel by an Act of Congress in 1937 and for those of the Coast and Geodetic Survey in 1939. The dependents of these services are now entitled under Section 326 (b) of the Public Health Service Act of July 1, 1944 (Public Law 410, 78th Congress, 78 Stat. 697) to outpatient care at Public Health Service facilities without charge and to hospitalization (if accommodations are available) at Public Health Service hospitals only at a per diem charge prescribed by the President.

In June of 1954 the Board of Trustees and the House of Delegates reviewed the policy on dependent medical care. At that time the Board recommended to the House of Delegates that medical care should be made available for dependents of service personnel in the following manner: (1) By military physicians in military facilities in overseas areas other than United States territories or possessions and in remote areas in the United States where civilian facilities are unavailable; (2) By civilian physicians in civilian facilities in all other situations. This position was approved by the House of Delegates on 23 June 1954.

At its most recent session at Miami in December 1954 the House of Delegates of the American Medical Association again enunciated the position of the medical profession on this subject, by stating: if it is to be the policy of the government to provide medical care for dependents of service personnel, the services of civilian physicians and hospitals should be used wherever possible, to be paid for at prevailing rates with provision for free choice of physicians.

During the second session of the 83d Congress, Senator Leverett Saltonstall of Massachusetts by request introduced a bill to provide medical care for dependents of members of the Armed Forces of the United States (S. 3363). On 11 May 1954 at the request of Dr. Walter B. Martin, President of the American Medical Association, the Secretary and General Manager of the Association, Dr. George F. Lull, sent a letter to Senator Saltonstall, Chairman of the Senate Committee on Armed Services, outlining the actions and position of the American Medical Association with respect to medical care for dependents of members of the armed services. Dr. Lull stated in his letter that in the event formal hearings were conducted on the proposal, the Association reserved the right to present further views and material. No hearings were held on the bill prior to the adjournment of Congress, and that bill died with the closing of the 83d session.

THE MEDICAL OFFICER WRITES

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H bl W R L C md (MC) USNR C mm h qu f pl g
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633 644 O 1954

Sp uz H L C I MC USA nd N l R S C I MC USA P
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S ra h J H Byrd W C Cap USAF (MC) nd E g G O Cap USAF (MC)
P ll Tex J M d 50 699 703 O 1954

V S kl A W C I USAF (MC) d H ga R J F t L USAF Ja fl gh
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529 555 Oc 1954

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W l h M B Cap W MSC (OT) USA T g f pp m ty mp Am. J
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Z mne man, L E L C I MC USA d R pp por H O ur f yp o-
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Path 24 1050-1072 S p 1954

Reviews of Recent Books

ATLAS OF MEN by William H. Sheldon Ph. D. M. D. with the collaboration of C. Wesley Dupertuis Ph. D. and Eugene McDermott, M. A. 357 pages illustrated Harper & Bros. Publishers New York N. Y. 1954 Price \$10

This latest volume of the author's "Human Constitution" series presents in a richly illustrated compendium the results of the application of somatotyping technics and classifications to a sample of 46 000 men. The book contains almost 1 200 photographs extensively indexed and placed in calibrated continuum of persons representing different somatotypes. The photographs literally give flesh to the author's famous triad code. The presentation afforded by the photographs is augmented by tables showing the height age and weight distributions of the somatotypes illustrated. Because the book is an atlas the textual material is comparatively limited but the general aims of somatotyping and some of its technics are dealt with briefly.

The author states that the principal purpose of the *Atlas* is not to discuss questions concerning the theoretic soundness of somatotyping but rather to provide a file of somatotype variations. Certainly he achieves this purpose. But he does allow himself the luxury of insinuating that as he has so long maintained personality reflects the somatotype the discussion of each major grouping of his subjects is introduced by a thumbnail description of their body build and general behavior patterns and analogies between each type and an appropriate animal. He does not further engage in the controversy over the relationship between body build and personality but does provide objective measurements reproducible from investigator to investigator which can serve as elements of communication between those who have aligned themselves for and against the idea that personality and body build are related.

The work will be useful to all those requiring information about the American male population as to the distribution of each combination of physical measurements. Clothing manufacturers, quartermasters in the armed services, tank and aircraft cockpit designers and similar persons need this information. Dr. Sheldon suggests further that medical clinicians incorporate somatotyping into their routine description of patients. He expects such incorporation and correlation to reveal a relationship between certain of the constitutional diseases and body type. Thus disease could be predicted in still healthy individuals and appropriate steps taken.

In a y se Dr Sheld n has hr ught th est mation of body build from Kr eplinian subjectivity to a high order of objectivity Individuals inv stig tin_g psychi tric and organic illness and thos study ng vari ations in normal psychology nd phy ology will find i this work a tool to broaden the scop of their in estig tions and perhap one day to combine and integrate their several efforts

—WILLIAM F SHEELEY Lt Col USAF(MC)

STUDIES IN SCHIZOPHRENIA A Mult d pl ry Approach o M d B
R l t h p by th T l ne D p tm t f P y b try nd N l gy
R p t d by R b t G H atb Ch rma 619 p g ill tr t d P b-
l h d f Th C mm w l h Fund by th H va d U ty P
C mb dge Ma 1954 P \$8 50

This unique vol m deta l co ordinated tudy of the pr bl m of chizophr a by a team of psychat sts n urolog ts phy i logists b och mists clinical psychol gists a d neuro urgeons

I s ction I hyp th s are dv nced wh ch c nceive f the brain as havi g f cilatory nd inhib t y circuit th t provide dynamic inter tion betw n higher and lower l vels f ntegrati n cort ponding to various l vels of the n uraxis Schizophrenic pat ent are con ide cd t h v phys logi mp riment in the fa ilitory ci ut whi h is sa d t b located th septal gion of th b a This fa lty facili tory c rcut p umed t xit nce e ly chldh od in h zophr n per ons te fetes w th m tional and intellectual growth nd re ult i their m tked vuln bility t the t e ses of everyd y lfe

Anim l studi to supp rt th bove f m lations t t p ted n tion II L s of the pt l region n at p oduc d aff cti ss and hyp kinet c a m l with metab l c chang s that esembl d th seen aft t extirpati of the adrenal cort x Electt cal timulation of the m dline septal gion in cats and monkeys elc t d lert ng o f c l t y f nct on ont ast to inhibitory re pon e that follow d stimu l t n of the mot l t al caudate a a

Human studies reported tion III Tw nty pati nts w th sch zophr were us d three other pat nt with term nal c cer a d tub ul is served cont ol Elect od w e impl ted in v i ous port n f th br in mainly by th open method a f w by a closed stere tact c t chn c Subc rtal electroencephalographi recordings inv i bly disclo d abnormal pik activity from the septal reg n p tients w th ch z phr nia which was not obtai d f m usual scalp le ds El t timulat on f th ptal gion produced alertne similar to that which occurred in animals and bi h mic l and hema tolog c chang esembling thos ev ked by adrenocort c troph c horm ne Psychiatr c and p ychol g cal b rv tions f ll w g t m latio ndic ted immed ate mp rove me t n emot onal responsiveness I b ut on half f the pat nt w th schizophr nia varying deg es of mp rove me t w mai tained

Section IV gives detailed summaries of each case. Section V contains discussions of the project by a distinguished group of clinical and research experts. Perhaps the most penetrating critique (Mertler) points out that technical inaccuracies in electrode placements, imperfect knowledge of the specific septal pathophysiology and zeal in the psychiatric efforts following stimulation make doubtful any conclusions reached by the research group.

While the specific techniques, limited controls and methods employed may be faulty, this reviewer considers the Tulane project as a milestone in the investigation of schizophrenia, primarily because the approach used endeavors to obtain objective data rather than indulge in theoretic speculations such as abound in current literature. This fascinating study is therefore highly recommended to all practitioners and students of psychiatry. It may well herald a new and profitable avenue to the understanding of schizophrenia and mind-brain function.

—ALBERT J. GLASS, Col. MC USA

FUNDAMENTALS OF ANESTHESIA Prepared under the Editorial Direction of the Consultant Committee for Revision of Fundamentals of Anesthesia, a publication of the Council on Pharmacy and Chemistry, American Medical Association, 3d edition, 279 pages, illustrated, W. B. Saunders Co., Philadelphia, Pa., 1954, Price \$6.

This volume, like previous editions, is a concise, clear outline of the principles of anesthesia prepared by outstanding authorities. They present the basic principles of anesthesia in regard to physiology, pharmacology, chemistry, and physics; the technical aspects of inducing surgical anesthesia; and the application of these principles to the management of patients suffering from injuries, illness, operations, or the effects of depressant drugs.

The chapters on the physiology, chemistry, and physics of anesthesia and hypnotic drugs are unusually lucid and thorough. There are also excellently written chapters on pre- and post-operative care, on general and regional anesthesia, and on special applications of anesthesia, including obstetric, pediatric, and geriatric problems. Complications and safety measures are also discussed.

There are numerous charts and pictures which simplify the text. Throughout the book the authors have made use of simple, self-explanatory diagrams to illustrate basic principles of physiology and the techniques of administering anesthesia are outlined and illustrated step by step. There is a minimum of verbiage; all that is written is straightforward and to the point.

This book should prove most valuable to the beginner in anesthesiology and to the practicing physician who seeks to familiarize himself with this broad field.

—FRED C. DYE, Col. USAF (MC)

DIENCEPHALON A om d Ext pyram d l F t on by W Lt Rud If
H M D 79 pag II tr t d Gru & Stratt In N w Y k
N Y 1954 P \$4

This monograph designed to analyze the central regulation of the function of the autonomic organs and the subcortical organization of motor function originally appeared in German. Many will appreciate the readable summarization of this classical work.

In the first part the author describes the original method of localized stimulation by defined electrical stimuli administered through precisely placed series of electrodes in the diencephalon from which the responses of the unrestrained animal are recorded cinematographically. A circumscribed destruction of this area and a single electrode accomplish diathermy cauterized histologically by a standard technique. Correlation of the information from the original placement of the electrode with stimuli employed the cinematographic record of the response of the subject and the histologic demonstration of the stimulated area permits analyses and conclusions regarding spatial organization of function in the diencephalon, diencephalic motor innervation and the role of the frontal lobe; autonomic effects. In the second part of the book this discussion of the integration of autonomic functions synthesizes the experimental results and correlates them with classical physiological principles such as Bernard's milieu interne and a law stated by the author namely that response of the organism is dictated by its functional equilibrium.

The book is well written with many figures and photographs. It will be valuable to the neurophysiologist and neuropathologist and should find a place in the library of anyone interested in general physiology. There is an excellent bibliography of 139 references which is particularly valuable due to the inclusion of many of the basic European investigators in this field.

—CHARLES H. STEINMETZ, F&L Lt USAF (MSG)

ORAL SURGERY by St. J. G. V. M. d. D. D. S. D. S. F. A. C. D. 4th ed.
1478 page w h 872 t t Illustr t d 13 l plat Th C V
Mosby C St L w M 1954 P \$25

As stated in the preface the purpose of this volume is not to encompass the entire field of oral surgery but to serve as a ready reference for the dental student and the dental practitioner. It is divided into 35 chapters, the first seven of which present an excellent review of the generalities and basic sciences related to oral surgery and are exceedingly well written and compiled. Following a detailed presentation on patient examination and diagnosis and the technique of procuring an adequate history with a correlation and co-operation with the physician is urged. The thoroughly comprehensive review of pre and postoperative medication is given. Particularly valuable is the section on chemotherapeutic and antibiotic agents. The discussion

these drugs has been brought up to date and should prove invaluable to those interested in the most recent findings relevant to the chemotherapeutic and antibiotic agents

Of special interest to the general dental practitioner is the section of this book which is devoted to periapical and periodontal diseases the removal of teeth and the preparation of oral tissues for restorations. Although for the most part the illustrations are excellent many of the flap illustrations for minor oral surgical and dental procedures reveal inadequate flap extensions in relation to the operative area. The chapters on fractures diseases and malformations of the maxillary bones and deformities of the jaws adequately present the subject material. The remainder of the volume is divided into sections on the maxillary sinuses the temporomandibular joint and its derangements diseases of the salivary glands the lips tongue blood and hemorrhage emergency measures cleft lip and palate oral tumors and dietary or nutritional measures.

The format of this book is excellent. The index is well compiled and the extensive bibliographies following each pertinent section provide detailed information on the subject matter. This volume is not sufficiently detailed to be of great value to the dental and the oral surgical specialist. As a reference and a source of information for the dental student and the general dental practitioner however it definitely deserves recommendation.

—ALEX M MOHNAC Lt Col USAF (DC)

CEREBROVASCULAR DISEASE by James Pete Murphy M D 408 pages illustrated The Year Book Publishers Inc Chicago Ill 1954 Price \$12

This volume should be a welcome addition to any doctor's library as it will serve to better acquaint him with the vascular diseases of the brain. All phases of diagnosis and treatment are adequately covered and there are several very helpful charts and an ample and up-to-date bibliography. The photographs and the type are good and the style is readable.

The author takes a definite stand on some controversial questions. He gives tacit approval to arteriographic demonstration of thromboses a clinical problem which frequently creates quite a dilemma. He also warns about the possible dangers of anticoagulant therapy. This should impress those who wish to use these drugs when the diagnosis is uncertain. The reviewer saw no reference to the results of the use of intravenous procaine solution as contrasted with stellate procaine blocks.

The author is to be congratulated and I agree with Dr Percival Bailey who states in the foreword that it is a scholarly and useful book and will have a well merited success.

—RICHARD W GARRITY Capt (MC) USN

ATTITUDES IN PSYCHIATRIC NURSING CARE by M d I Olg W
R N B S M L 111 pag G P P nam S N w Y k
N Y 1954 P \$2

This small volume will win your heart. To begin with it is a friendly book its size paper cover and large print say to you. You can pick me up any part time. You do not have to set aside several days to do it justice. Furthermore while you are reading it you feel you are just sitting talking to Miss Weiss. Numerous actual examples of what she was describing come to my mind while reading and I felt like saying Yes that's very true.

This book was received at a time when in our nurses meeting we were emphasizing working with patients. Our less experienced nurses had asked how to be more effective in patient care and we had replied by describing actual experiences of our failures and successes with different patients. How delighted I was to receive a book on attitudes at that time and find in it many of the things we had been talking about. The theme is well developed and thorough. The discussion of attitudes goes as well as the application of the attitudes in relation to the patient become more meaningful then when treated as a single entity.

Miss Weiss' book will be in our recommended reading list. It is a learning experience for the new nurse in psychiatric nursing and a mass of everything that the experienced nurse in this field. Add three checks for the last chapter. The Nurse's Individual I was so much in agreement that after reading it I took the afternoon off and had a conference broke a hard after appointment and went to the State Fair.

—LINA STEARNS L (NG) USN

SEVENTY FIVE YEARS OF MEDICAL PROGRESS 1878-1953 (F W
H m ph C af f th W ld M d l A t) d t d d
w th f word by L H B ue M D F A C P 286 p g L &
F b ge Ph lad lph Pa 1954 P \$4

This volume is compilation of papers on the history and present status of medicine in 19 medical specialties and one paper on general practice. The title of the volume was the theme of the 1953 First Western Hemisphere Conference of The World Medical Association and each of the papers was contribution to that Conference by a distinguished authority in medicine.

Although book of this size obviously cannot describe every great advance in medical science during the period covered it nevertheless does report on some of the most significant discoveries through the past 75 years. Unlike many other similar treatments most of the authors honestly make an effort to portray the historical developments in the field of their interest and the developments are placed in their proper relationship or perspective to other fields of medicine.

The chapter by Dr Ulrich R. Bryner on general practice is particularly good. In addition to reviewing the factors that altered the nature of general practice from the days of our grandfathers, Dr Bryner quotes some interesting statistics. Although in the United States there are more physicians in practice today than ever before, there are fewer full-time general practitioners than there were in 1940 or 1880. In the decade of 1940 to 1950, the number of general practitioners decreased by 13 percent and the number of specialists increased by 63 percent.

If one desires more than a cursory discussion of the significant discoveries in medicine during the past 75 years, he will not be able to find it in this book. This volume will be, however, a small but handy adjunct to a reference library.

—CHARLES L. LEEDHAM Col MC USA

THE PHYSICAL ENVIRONMENT OF THE FLYER by Dr Heinz Haber 179 pages illustrated Air University USAF School of Aviation Medicine Randolph Field Tex 1954

This is a handbook on the physics of the atmosphere and its relation to flight which will be of interest to all who are engaged in aviation medical research. A valuable condensation of much scientific material, the discussion begins with the gaseous state of matter and proceeds in a logical manner to a consideration of the mechanical and thermal aspects of high speed flights. The atmospheric jet stream phenomenon capable of boosting airborne speeds by 100 miles an hour and the problems of bailout at very high altitudes are two of the many major fields of current investigation that the author presents authoritatively.

In reviewing the aeropause, a concept he helped evolve, Dr Haber says that the technical means available in aviation today make it necessary to investigate the technical and human problems peculiar to flight in the border area between the terrestrial atmosphere and space.

At an altitude of 120 miles the aerodynamic forces of lift and drag vanish completely. This level can be considered the mechanical borders of space for all practical purposes. Though compelling reading, the volume is directed primarily to the serious scientist who requires a ready summary of current accepted facts in this field. There are a generous number of figures and tables from published works, an adequate index, and a total of 162 references to the literature.

—ROBERT J. BENFORD Col USAF (MC)

CLINICAL INTERPRETATION OF LABORATORY TESTS by Raymond H Goodale M D 3d edition 720 pages 105 illustrations 6 in color F A Davis Co Philadelphia Pa 1954 Price \$6.50

This book is an attempt by the author to correlate the laboratory findings in health and disease to the special systems of the body. In part one, there is a brief discussion of the physiology and normal variations of the various body fluids and excreta. This section also includes chapters which would be of interest to laboratory technicians.

medical student and others engaged in the basic sciences relative to the understanding of the underlying disease processes associated with the various laboratory procedures. Subject included here are the basal metabolism, the biochemical outline of liver function tests and virus, mycor and bacteriaologic examinations as they pertain to diagnosis in specific circumstances.

Part two discusses lending them levels to laboratory examination presented with a brief explanation of each. The common associated laboratory finding which are by the way expected to be found in these diseases are mentioned and recommended tests discussed.

A ready reference for the medical student, technologist or busy practitioner this book should fill a need. There are a number of above average illustrations which merit special attention. A complete text is not recommended for the serious student of internal medicine or the professional laboratory technician.

—WILLIAM L. CHAPMAN Lt (MC) USN

APHASIA THERAPEUTICS by Mary C. L. L. G. b. Ph. D. d. J.
 Bo. d. ux Ph. D. 185 p. g. Th. M. m. ll. C. N. w. Y. k. N. Y. 1954
 P. \$3.75

The author's detailed description of the clinical form of the aphasia and the approach to the patient with aphasia. Commendable attention is given to the assessment of the dual capacities of the patient and the psychological factors and their influence on the therapeutic process.

One cannot avoid seeing the high degree of patient skill and empathy required in successful aphasia therapy. A valuable contribution but not preliminary to the book is the symptomatology which could aid in the correlation of symptoms with the tomographic location of the lesion. The treatment of this material is too detailed for this type of book. Amplified clinical notes with comments of a room full of would-be blyhsses as well as to introduce the patient to the fun of the facts and residual capacities which may form the basis for a new life. Most physicians probably will disagree with the inclusion of hysteria in the discussion. While the author may not have intended the impression given that they regard the treatment of hysteria with the use of hypnosis with the specific reproducibility of the physical therapy. Beyond occasional superficial symptomatic similarity in hysteria and loss of function of the ultimate from brain injury the reader is left to his own conclusions for this connection.

In general this is a reformer's book which should be of value to physicians and others interested in knowing more about training techniques in aphasia, gnosis and perception.

—WILLIAM H. ANDERSON Lt Col MC USA

NONTUBERCULOUS DISEASES OF THE CHEST edited by *Andrew I. Banyas*
 M D 1152 pages 260 illustrations Charles C Thomas Publisher
 Springfield Ill 1954 Price \$18.75

This volume is a collective and co-operative project by 37 contributors from the United States, Argentine, England, India and Mexico. It includes chapters on the physiology and pathologic physiology of respiration, the bacterial, viral, parasitic and mycotic diseases of the chest, tumors of the lung and mediastinum, industrial diseases, congenital anomalies and diseases of vascular origin. Most of the chapters present a comprehensive coverage of the subject with excellent bibliographies attached. Many of the references by foreign authors are to foreign literature and are not always readily available in this country. References to some recent authoritative reports published in this country have been omitted. The inclusion of articles by outstanding authorities from other countries, however, broadens the scope of the coverage of material.

The specific treatment of some infectious diseases, particularly with reference to antibiotic therapy, is already somewhat out of date, however, the general fundamentals of treatment are well covered.

This is an excellent book and I believe the most comprehensive and complete volume on the subject of nontuberculous diseases of the chest. It should be in all medical libraries and will prove to be an excellent reference for all interested in these conditions.

—JAMES A. WIFE, 11 Col MC USA

PRACTICAL FULL DENTURE PROSTHESIS by *Joseph Simeon Lanza*
 D D S 2d edition 501 pages 218 illustrations Dental Items of Interest Publishing Co Inc Brooklyn N Y 1954 Price \$9.50

This text is a practical guide for the dental practitioner in the treatment of the edentulous patient and should be an invaluable addition to the library of the general practitioner or postgraduate student. It contains many practical suggestions based on sound principles. The chapters are arranged in logical sequence, with the exception of those on tooth arrangement, occlusion and articulation.

The chapter on anatomic and physiologic considerations points out many areas which warrant special attention in complete artificial denture construction, however, the explanation based on the anatomy of some of these areas is not coincident with a more detailed study of the subject. The discussion of denture base materials will not be enlightening to those seeking information on the methyl methacrylate and chrome cobalt alloys. The discussion of the free way space is informative but the method of measurement employing the author's device, is debatable. In *Phonetics in Complete Denture Prosthesis*, the author describes the use of phonetics as an aid to proper anterior tooth arrangement and to the establishment of correct vertical dimension. The description of the tongue position in pronouncing the various consonants

nants is questionable however The chapters by Schuyler and Nigle are excellent additions to the text

The book is written in an uncomplicated easy flowing style and the number of illustrative photographs and diagrams is adequate The author made a thorough review of the literature in the field is evidenced by the extensive bibliography The index too is very complete but both bibliography and index should have been listed in the table of contents under their own headings

—LESLIE R ALLEN Lt Col USAF (MC)

THE ROENTGENOLOGIST IN COURT by *Samuel Wight Donald* M D
2d edition 358 pgs Ch I C Th ma P bli h Sp g f ld Ill
1954 P \$7.75

This readable informative and interesting volume is concerned with the relationship between radiologic practice and the law a subject of the greatest importance to physicians in this specialty As the author points out any radiologist (as well as any other physician) is likely some day to appear in a courtroom either as a defendant or as a witness in a malpractice suit This book is intended to help prepare him for the time when he may be served with a subpoena and even more important to educate him in the field of malpractice prevention

There is an ever increasing consciousness of the hazards to physicians of the malpractice suit During 1952 alone in every 38 physicians in the United States was sued for malpractice for total of 4,000 suits—a tenfold increase since 1929 Furthermore the average amount of the judgments against physicians has greatly increased As a result malpractice insurance is becoming more difficult to obtain

Radiologic practice in the vanguard of medical specialties plagued by the legal hazard of malpractice action The author believes that much can and must be done to improve this alarming situation There exists great opportunity to improve the personal and public relations of physicians and the author specifies what measures can be effectively used

The chapter headings indicate the scope of the work Relationship between Physician and Patient Malpractice The Physician and the Law of Agency Malpractice Defense and Prophylaxis Evidence and Testimony Privileged Communications Expert Testimony Expert Witness Films X-Ray Films a Evidence Ownership of Films Physician and Contractor X-ray and Dentistry The text contains citations totaling 400 cases These cases are listed both alphabetically and geographically by states for ready reference There is a bibliography and a good index

The book is attractively printed and is pleasing to read thanks to the author's selection of material and to his excellent style of presentation No radiologist who starts the book will fail to finish it certainly every radiologist should read it

—CARR E BENTEL, Capt (MC) USN

New Books Received

Books received by the *U S Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be selected for review in a later issue.

COLOR ATLAS OF PATHOLOGY Volume 2 Endocrine System Including Pituitary Thyroid Parathyroid Adrenals and Pancreas Gynecology and Obstetrics Including Reproductive Organs Breasts Male Genital Tract Skin. Prepared under the auspices of the U S Naval Medical School of the National Naval Medical Center Bethesda Md 450 pages Illustrated with 1 032 figures in color on 343 plates J B Lippincott Co Philadelphia Pa 1954 Price \$20

THE NEUROANATOMICAL BASIS FOR CLINICAL NEUROLOGY by *Talmage L. Pele M D* Associate Professor of Anatomy in Charge of Neuroanatomy Assistant Professor of Medicine Duke University School of Medicine 564 pages illustrated McGraw Hill Book Co Inc New York, N Y 1954 Price \$12.50

BLOOD GROUPS IN MAN by *R. R. Race Ph D* (Cambridge) *M. R. C. S. (England) F. R. S.* Director Medical Research Council Blood Group Research Unit The Lister Institute London, and *R. H. Sanger Ph D* (London) *B. Sc* (Sydney) Medical Research Council Blood Group Research Unit The Lister Institute London with a Foreword by Professor *Sir Ronald F. S. F. R. S.* 2d edition 400 pages illustrated Charles C Thomas Publisher Springfield Ill 1954 Price \$7.50

THE DISTRIBUTION OF THE HUMAN BLOOD GROUPS by *A. E. Mourant M. A. D. Phil. D. M.* (Oxon) Director Medical Research Council Blood Group Reference Laboratory The Lister Institute of Preventive Medicine London Honorary Member of Staff The Lister Institute Honorary Adviser Nuffield Blood Group Centre Sometime Visiting Professor of Serology Columbia University in the City of New York With a Foreword by Professor *H. J. Flue F. R. S.* 438 pages illustrated Charles C Thomas Publisher Springfield Ill 1954 Price \$8.75

RETROPUBLIC PROSTATECTOMY For Benign Enlargement of the Prostate Gland by *F.ancis A. Ben. ent M. D. F. A. C. S.* Attending Urologist Oswald Swinney Lowley Foundation St. Clare's Hospital Attending Urologist Lincoln Hospital Associate Attending Urologist New York Polyclinic Hospital and Medical School Assistant Attending Urologist James Buchanan Brady Foundation of the New York Hospital New York N. Y. Art direction and 44 original drawings by *William P. D. Busch* 227 pages Charles C Thomas Publisher Springfield Ill 1954 Price \$11

BIOCHEMISTRY by *Abraham Cantow M. D. P. h. D.* Professor of Biochemistry Jefferson Medical College and *B. nard Schepartz Ph. D. A. S. i. t. n. t.* Professor of Biochemistry Jefferson Medical College 848 pages illustrated W. B. Saunders Co Philadelphia Pa 1954

SELECTED WRITINGS OF FLORENCE NIGHTINGALE mp l d by Lucy
Rudg ly Sym M A (O) S R N 396 p g Th Ma m lla C
N w Y k N Y 1954

FLUID THERAPY by J m D H ndy M S (Ch m) M D F A C S
A t P f f S g ry d D t f th S g l Lab ra
M d l C ll g f th U y l T Memph
Diplomat Am ca Board l S g ry d Ame ca B d f Th ra
Surge y 255 pa 77 illustrat os 8 tabl L & F h ge Ph la
d lphia P 1954 P \$5 50

THE YEAR BOOK OF OBSTETRICS AND GYNECOLOGY (1954 1955 Y
B k S) d t d by J P G nb ll M D F A C S P f
of Gy l gy C k C y Gradua S h l l M d ne At d g
Gy l g t Cook Co y ll p tal Att nd g Ob d Gy
l g t Much l R ll p tal A Staff Chu g Ly g
Hosp tal A h f Off Gy c l gy Obs t G ral Pra t
nd P nc pl d Pra ol Ob n 544 page Th Y B k
Publ h l Ch g ll 1954 P \$6

FREEDOM FROM FEAR by L t L C l ma M D 285 pag ll with
Books l N w Y k, N Y 1954 P \$3 95

CLINICAL ORTHOPAEDICS by A th ny F D P lma Ed t Ch f w th
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Ed or Numb Fur 240 pag ll trat d J B L pp tt C
Ph lad lphia Pa 1954 P \$7 50

SIMPLIFIED DIABETIC MANAGEMENT by J ph T B dw od J M D
F A C P P f f D f M bol m Gr d S hool f
M d U ty f P ylva D t f Med l S
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t th M tabol Se f th P by ll p tal Ph lad lph
d H b t T K lly M D F A C P A t M d G d
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Hosp l Ch rma f th Commutt on h t M d l Soc ty f
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Coun l 6th d t 194 page ll d J B L pp tt C
Ph lad lphia P 1954 P \$3

DONOVANOSIS (Gran l ma Ing l G l m V um) by R V R j m,
M S F R C P Dis t V l D D p m t G m t
G ral Hosp tal M dra P l or f V re l D Mad
M d cal C ll g Madr Forme ly WHO C lta t on V l In
f on d T pou mat d P N R g h M D A
P f or f V l D M d M d cal C l leg M d
Phy V l D D pa me t G rnm Ge ral H
p tal M dra W ld ll th Orga z t Mon gr ph S N 24
72 p g ll tr d W ld H lth O g t P l D N t
G Sw t l d p bl h 1954 C l mb U ty P
N w York N Y d tr but P \$1 50

THE PSYCHOLOGICAL VARIABLES IN HUMAN CANCER A Symp um
P d he V ra Adm n rat ll p tal L g B h Ca lf
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h l gy Un ty f Call na t L A g l d F k j K k
Chi f Cln l P y h l g t V rans Adm n trat ll p t l L g
Bea h Cal f nd A oc Cln l P of f P y h l gy Un
rs y f Cal f m t L A g l 135 pag Un ty f Cal
f m P B k l y nd Los A g l Cal f 1954 P \$3

- TEXTBOOK OF MICROBIOLOGY** by William Burrows Ph. O. Professor of Bacteriology Department of Bacteriology and Parasitology University of Chicago with the collaboration of Francis E. Brown Ph. D. M. D. Head Division of Virology Naval Medical Research Institute National Naval Medical Center Bethesda Md. Professor of Bacteriology Department of Bacteriology and Parasitology the University of Chicago Richard Jarvis Ph. O. Professor of Parasitology School of Public Health, the University of Michigan James William Mould Ph. D. Associate Professor of Chemistry Department of Bacteriology and Parasitology the University of Chicago 16th edition 824 pages illustrated W. B. Saunders Co. Philadelphia Pa 1954
- FLUID AND ELECTROLYTES IN PRACTICE** by Harry Stotland M. D. Associate in Medicine University of Kansas School of Medicine Consultant in Medicine Veterans Administration Hospital Kansas City Mo. Attending Physician Menorah Medical Center Kansas City Mo. 206 pages illustrated J. B. Lippincott Co. Philadelphia Pa 1954 Price \$5
- RENAL FUNCTION** Transactions of the Fifth Conference October 14-16 1953 Princeton N. J. edited by Stanley E. Badley M. D. Associate Professor of Medicine Columbia University College of Physicians and Surgeons New York N. Y. 218 pages illustrated Spence & Josiah Macy Jr. Foundation New York N. Y. 1954 Printed by Corner Macy & Co. Inc. New York N. Y. Price \$3.75
- STELLATE GANGLION BLOCK Technique Indications Uses** by Daniel C. Moore M. D. Director Department of Anesthesiology Mason Clinic Chief of Anesthesia Virginia Mason Hospital Seattle Wash. 280 pages illustrated Charles C. Thomas Publisher Springfield Ill 1954 Price \$10.50
- THE PYRAMIDAL TRACT Its Status in Medicine** by A. M. Lasek M. D. Ph. D. Professor of Anatomy Boston University School of Medicine Boston Mass. American Lecture Series Publication Number 233 A Monograph in The Bannerstone Division of American Lectures in Anatomy edited by Otto F. Kampmeier Ph. D. M. D. Professor of Anatomy and Head of Department 1928-1951 Professor of Anatomy Emeritus 1953 Professor of Medical History 1951-1953 University of Illinois College of Medicine Chicago Ill. Head of Department of Anatomy School of Medicine College of Medical Evangelists Loma Linda Calif 166 pages Charles C. Thomas Publisher Springfield Ill 1954 Price \$4.75
- THE MANAGEMENT OF ENDOCRINE DISORDERS OF MENSTRUATION AND FERTILITY** by Georanna S. Jones M. D. Assistant Professor of Gynecology The Johns Hopkins University Gynecologist The Johns Hopkins Hospital Baltimore Md. American Lecture Series Publication Number 206 A monograph in the Bannerstone Division of American Lectures in Endocrinology edited by Willard O. Thompson M. D. Clinical Professor of Medicine University of Illinois College of Medicine Chicago Ill 198 pages illustrated Charles C. Thomas Publisher Springfield Ill 1954 Price \$5.75
- TEXTBOOK OF PEDIATRICS** edited by Waldo E. Nelson M. D. Professor of Pediatrics Temple University School of Medicine Medical Director of Saint Christopher's Hospital for Children With the collaboration of 70 contributors 6th edition 1581 pages illustrated W. B. Saunders Co. Philadelphia Pa 1954

A PRACTICAL MANUAL OF DISEASES OF THE CHEST by Maur c D d
M A M D Oxon F R C P L nd Con l g Phy t
th B ompton Hosp tal for C umpt nd D f th Ch t
S m time A ociat Phy t th R yal Ca H p t l C lt
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Middl H p t l 4th d t Oxf d M d cal Publ t 647
pag ll rat d Oxford Uni ry P N w Y k N Y 1954
P \$19 25

COMPARATIVE ANATOMY OF THE VERTEBRATES by G org C k t J
A oc P f or f Zool gy L issana Stat U ry 530 page
llustra d Th Blak C l N w York N Y 1954 P \$6

TREATMENT OF ACUTE POLIOMYELITIS d t d by William A Sp er
M D From h D pa tm f P d tr Phy l gy nd Phy cal
Med B ylor U ry C ll g f Med C l thw t P lo-
my l t s R purat ry C t J ff D ll p t l I C perat
w h The N t nal F undat f Infat l Pa ly In 134 page
llustrat d Ch le C Th ma P blsh Sp ngf ld Ill 1954
P \$3 75

SHOULD YOU DRINK by Chal H Dief Ph D 152 page Th
Ma mlla C N w Y k N Y 1954 P r \$2 49

SENTENCE COMPLETION A P j t M th d f th Study f P onal ry by
J m Q t H l ppl D on f Cl cal P y h l gy P y h try
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TREPONEMATOSIS A World P hl m by T Gutb M D M P H Ch f
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P la De N on Ge va Sw tz la d publ h 1954 C lumbia
Uni er ry Pr N w Y k N Y d t r h t P \$0 50

THE STORY OF DENTISTRY F m th D w f Ca l t t th P t
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Inte Publ h g Co l B kly N Y 1954

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M 1954 P \$6 75

INSTRUCTIONS FOR AUTHORS

The *United States Armed Forces Medical Journal* is devoted to the publication of original investigation observations and clinical experiences of interest to personnel of the medical services of the three military departments. Contributors who are affiliated with one of the military services in a commissioned enlisted or civilian capacity should forward manuscripts to the Surgeon General of the United States Army, Navy or Air Force, Washington 25, D. C. in accordance with existing regulations. The covering letter should state that the author desires the manuscript to be given consideration for publication in this *Journal*. Other authors should send manuscript directly to the editor. Accepted manuscripts become the property of the Armed Forces Medical Publication Agency and will not be returned.

MANUSCRIPTS

An original typewritten copy of each manuscript with wide margins on unruled paper size 8 by 10½ inches must be submitted. Carbon copies are not acceptable. All written matter including references must be double-spaced. Articles are accepted with the understanding that they are submitted solely to this *Journal* and that they will not be reprinted without the permission of the editor. A brief factual summary which is complete in itself should conclude each paper. The editors reserve the privilege of editorial modification. The senior author will be furnished with a proof of his article prior to publication and with a generous number of tear sheets without cost in lieu of reprints. Authors are responsible for the accuracy of their statements.

REFERENCES

References to published literature should be listed at the end of the article in the numerical order in which they are cited in the author's text. Care and accuracy in the preparation will expedite publication of the article. Following are correct examples of reference.

Fleming, A. Young M. V. Suchet J. and Rowe A. J. E. Penicillin content of blood serum after various doses of penicillin by various routes.
Lancet 6: 1-6 4 Nov 11 1944

Cabot R. C. P. Pernicious and secondary anemia chlorosis and leukemia.
In Oler W. (editor) *Modern Medicine* 3d edition Lea & Febiger
Philadelphia Pa. 1937 Vol 5 pp 33-100

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